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Consequences of Drinking

TRENDS IN ALCOHOL PROBLEM STATISTICS IN SEVEN COUNTRIES

Papers associated with *Alcohol, Society, and the State*—a report of the International Study of Alcohol Control Experiences, in collaboration with the WHO Regional Office for Europe

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Toronto

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INTRODUCTION

This collection of papers describing and analyzing post-war trends in alcohol problems in seven industrialized societies is one of the products of the International Study of Alcohol Control Experiences (ISACE). The ISACE project originally focused on the bases and nature of control mechanisms, considering how they develop under different cultural and historical conditions (Mäkelä *et al.*, 1981). ISACE was not, in other words, specifically concerned with cross-cultural comparisons of alcohol problems. Describing alcohol problems was, however, important for two reasons. First, the project dealt with alcohol problems as both determinants and objects of alcohol control policy. Secondly, alcohol problems are an integral part of the social history of alcohol since they are relatively well documented manifestations of alcohol behaviour.

In general, ISACE widened the scope of variables and offered new interpretations for post-war trends in per capita consumption and damage. The forces of production, trade and distribution were a central focus. The project considered the powers and constraints of the state as well as the divergent and often piecemeal alcohol policies, and noted the demands, interests, traditions and new fads adopted by consumers. Expansions and re-orientations in control, intervention and treatment systems were documented.* The ISACE project confirmed and elaborated conclusions and undertook research suggestions offered in a previous international collaborative report (Bruun *et al.*, 1975).

Numerous manuscripts were prepared for the project and presented at the four working meetings held between 1978 and 1981. These ranged from conceptual papers, research notes, background material for chapter drafts of the main volumes, to extensive and detailed monographs on special topics. A complete list of working papers is presented in Mäkelä *et al.* (1981: 131-135).

Many of these documents have found their way to publication. A number of papers have appeared in scientific journals, independent of the ISACE collection format. Research institutions which were represented by ISACE participants also printed papers or progress reports, through collections such as Reports of the Social Research Institute of Alcohol Studies (Finland), the Reports of the Research Division of the Swiss Institute for the Prevention of Alcoholism, the Drinking and Drug Practices Surveyor (California), and the Substudy and Working Paper Series of the Addiction esearch Foundation (Ontario). Two special editions of ISACE-related papers, edited by Robin Room, have recently been published in Contemporary Drug Problems (volume 10, numbers 1 & 2, 1981).

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* Volumes I & II of the ISACE project: Alcohol, Society and the State: A Comparative Study of Alcohol Control (Mäkelä *et al.*, 1981); Alcohol, Society and the State: The Social History of Control Policy in Seven Countries (Single *et al.*, 1981).

By the time of the second meeting of ISACE in 1979, there was sufficient descriptive and statistical material dealing with alcohol problems to warrant a closer examination of this topic area. At this time initial plans were set out to compare and contrast trends in alcohol problem statistics, initially for three jurisdictions, subsequently expanded to include all seven ISACE countries. Particular attention was to be paid to the relative validity of the data series, the relationship of trends in damage statistics to alcohol consumption, and of the impact of policy changes on the series. This collection reiterates these themes and brings to fruition plans laid in 1979.

At the final ISACE meeting in 1981, an editorial group was designated to explore the possibility of putting together a collection of working papers dealing with alcohol problems. The original intention was to place the statistical series of alcohol problems for ISACE countries within the same covers in the format of figures or tables, accompanied only by brief remarks or interpretations of a technical nature.

During the process of revision and editing, the working papers took on more descriptive and analytical elements, so that that final product is more like a book than a data-bank. All seven jurisdictions are represented in this collection. All of the papers are original in that they have not appeared in this form in other publications. Two (the papers from Ireland and the Netherlands) were especially prepared for this volume, and in other cases there were substantial revisions of working papers presented at the ISACE planning meetings.

The papers are generally similar in theme, approach to the data, and type of data series used. However, they differ in their emphasis, presentation of data, interpretation and specific conclusions drawn. A common theme is that indicators of alcohol damage have generally increased during the post-war era. As suggested in the other ISACE volumes (e.g., Mäkelä *et al.*, 1981: 109), this does not apply to each series for each jurisdiction. However, when trends for a variety of indicators in a number of countries are considered together, there is ample justification for this conclusion.

The data base is similar from one paper to the next. In all of the papers alcohol-related problem indicators are selected from four main areas: mortality, morbidity, police and court statistics, and traffic accident data. Some papers consider alcohol problem statistics in light of survey data on alcohol consumption and drinking styles.

There is also a similarity in the approach to the data. The authors comment on the validity and reliability of the data series. They attempt to decipher which events or conditions the series alludes to. They consider how policy changes, and broader cultural shifts (e.g., road traffic volumes) impact statistics on alcohol damage.

Despite these similarities, each paper offers a unique contribution toward understanding trends in the consequences of drinking. In the ISACE project it was realized that different countries define social problems in different ways. Neither do countries record and manage alcohol problems in the same way. The various tasks which are designated to different officials, and the manner in which resources are shared among the different spheres of bureaucracies, affect when and how alcohol problems are handled. This has an effect on statistics as well.

The papers point to basic conceptual and methodological problems. A number of questions are raised, such as: What are the main influences and determinants of statistical series on alcohol-related "consequences"? How do the various factors influence the time series in different eras or in different socio-cultural settings?

Nonetheless the findings give no basis for complacency about the level and extent of alcohol problems. It is clear that consumption of alcohol both in the aggregate and by sub-groups should not be considered a benign, coincidental or spurious variable. In addition, drinking traditions, beverage preferences and the style and distribution of excessive consumption have noticeable linkages to damage statistics. In several jurisdictions, new uses of alcohol and drinking styles were added to old styles, probably contributing to elevated rates in both acute and chronic consequences of consumption.

These papers indicate the strengths, and the limitations, of more global approaches where several data series are examined within a jurisdiction versus cross-sectional presentation of one indicator. They represent the approach taken in ISACE as a whole, involving the method of cross-cultural comparison of trends over time in individual national experiences.

The papers are intended to encourage further analysis and research on the selection of appropriate indicators of damage, and documentation of their relevance as indirect barometers of alcohol consumption, actual incidence and prevalence of damage, and the impact of control and rehabilitation activities. They also are presented as a resource for policy considerations and the development of appropriate interventions.

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ALCOHOL-RELATED PROBLEMS IN POLAND, 1950-1981

by

Jacek Morawski*

INTRODUCTION

The purpose of this paper is to present an overview of trends in alcohol-related problems in Poland as indicated by statistical data on public order, traffic and public health consequences of alcohol consumption. Two themes are evident in the description and interpretation which follows. Changes in regulations and enforcement, as well as in classification categories, provide the basis for insights into the social perception and control of alcohol problems while at the same time confounding the assessment of linkages between consumption rates and statistics on "consequences." Secondly, both the overall rate of consumption and the consumption by the main beverage categories impacts the rates for alcohol-related problems, although these relationships are not consistent throughout the study period.

Information is provided on a number of specific indicators in order to illustrate the range and variety of "consequences" and to permit international comparison. Although statistics are not available for some topics because the appropriate data are not collected systematically, or not published, trend data covering several decades are presented as key variables. In order to obtain comparable data and attempt to resolve discrepancies evident among published series, it was nearly always necessary to consult original statistics from the relevant institutions.**

CONSUMPTION PATTERNS AND PERCEPTION OF ALCOHOL PROBLEMS

The consumption of alcohol increased substantially for the period under review, from 3.0 litres per capita in 1950 to a peak of 8.4 in 1980. However, this overall trend is uneven and the curve can be divided into three parts (Figure 1). In the years 1950 through 1956 there was a slight rise in the per capita rate although a sharp peak is evident in 1957. This was followed by a stabilization at about 4 litres in 1957 through 1965. Thereafter a rapid increase is evident as the rate went from 6.1 to 8.4 litres per capita. Due to alcohol rationing, the last year (1981) presented a sharp drop to 6.4, comparable to the rate during the early 1970s (Table 1).

Vodka contributes by far the largest proportion to overall alcohol sales, and, in general the trend in alcohol consumption in the form of vodka parallels that for overall consumption (Figures 1 and 2). Nevertheless in the late 1950s the consumption

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** The Central Statistical Office and the Civic Militia Headquarters provided special assistance with regard to data collection.

TABLE 1

CONSUMPTION OF ALCOHOLIC BEVERAGES, POLAND, 1950-1981

Year	Millions of Litres of Pure Alcohol	Litres of Pure Alcohol Per Capita	Litres of Pure Alcohol Per Adult*
1950	73.5	3.0	4.2
1951	74.8	3.0	4.2
1952	78.4	3.0	4.2
1953	80.6	3.1	4.4
1954	87.5	3.3	4.7
1955	91.0	3.3	4.8
1956	95.4	3.4	5.0
1957	114.9	4.1	5.9
1958	111.1	3.9	5.7
1959	116.1	4.0	5.9
1960	112.9	3.8	5.7
1961	119.0	4.0	5.9
1962	117.5	3.9	5.7
1963	123.0	4.0	5.8
1964	121.1	3.9	5.6
1965	128.4	4.1	5.9
1966	136.4	4.3	6.1
1967	146.6	4.6	6.4
1968	160.6	5.0	6.9
1969	171.8	5.3	7.2
1970	168.3	5.1	7.0
1971	181.7	5.6	7.4
1972	196.6	6.0	7.9
1973	216.0	6.4	8.5
1974	214.3	6.2	8.3
1975	236.8	6.9	9.1
1976	266.6	7.8	10.1
1977	285.1	8.3	10.7
1978	281.7	8.0	10.6
1979	282.6	8.0	10.5
1980	300.3	8.4	11.1
1981	229.9	6.4	8.5

*Persons aged 15 and older.

Sources: Data of the Chief Statistical Office (GUS).

FIGURE 1

CONSUMPTION OF ALCOHOLIC BEVERAGES IN LITRES PER CAPITA, POLAND, 1950-1981

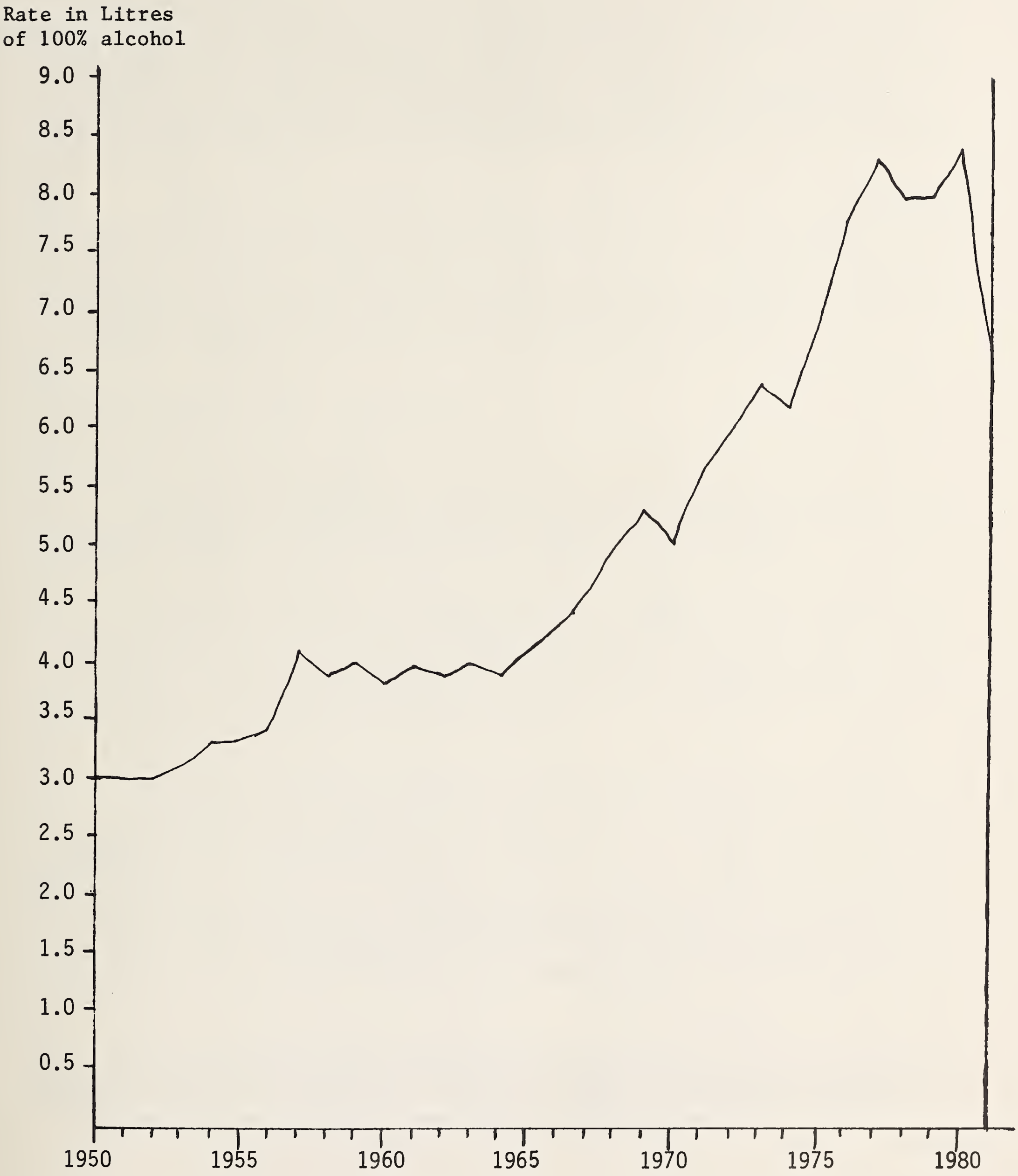
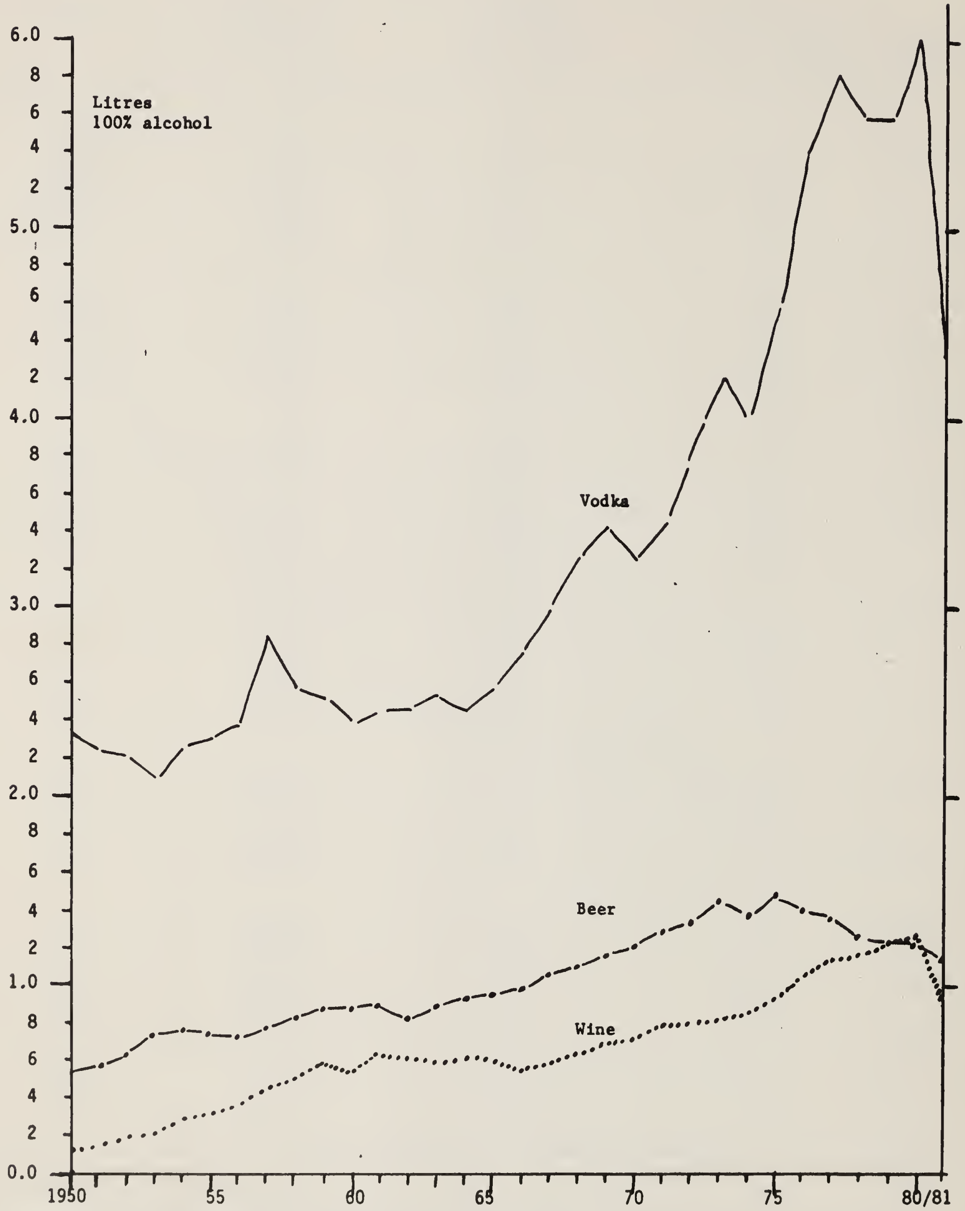


FIGURE 2

PER CAPITA CONSUMPTION OF ALCOHOL BY MAIN BEVERAGE CATEGORY, POLAND, 1950-1975



of vodka decreased while beer and wine increased and the overall rate of consumption was stable. Since the mid-1960s there was an increase in the rate of consumption to which vodka made a substantial contribution.

In Poland, the preference has been for strong alcoholic beverages, mainly vodka, often consumed in large quantities at one drinking session. This traditional drinking pattern of the Poles has influenced the perception of alcohol problems: the consequences of drunkenness rather than alcohol dependence or alcoholism have been emphasized. Indeed, until the late 1950s the problems of alcoholism were primarily analyzed in terms of public order. One of the most widely-known contributions to alcohol problems management in the modern era is the "sobering-up" station introduced in Poland in 1956, which was a precursor to numberous detoxication centre programs in North America and Europe.

A number of laws passed in 1956 and 1959 were aimed at reducing the negative social consequences of drinking alcohol by widening the scope of the penalty for alcohol-related offences. This renders the interpretation of data difficult, making it necessary to consider many factors which may influence them such as changes in data collection in various institutions, changes in legislation which is not alcohol-related and others discussed below.

PUBLIC ORDER AND AGGRESSION

Public Drunkenness

There are three sources of information on public intoxication: statistics on persons detained in sobering-up stations, data on persons detained at police stations to sober up and charges for liquor misdemeanour offences.

A law was passed in 1956 which allowed persons found intoxicated in public to be detained in sobering-up stations without penalty. Data collection on detentions in sobering-up stations began in 1956, the year the first station began operation in Warsaw with 82 beds. By 1981 there were 52 stations with a total of 2,013 beds. The network of sobering-up stations was established between 1957 and 1961 with further expansion in the 1970s.

The number of persons detained in "sobering-up" facilities rose rapidly in the late 1950s, and increased steadily thereafter. Conversely there was an overall decline in the proportion detained in police stations with a dramatic decline in 1966 and followed by an increase in 1971. From 1966 onward the majority of the total were detained at sobering-up stations. Following the period of rapid expansion of the network of sobering-up stations in the late 1950s, the rate of detainees (number per 100,000 inhabitants) was stable between 1960 and 1965. However, from 1970 to 1980 the rate of detentions rose disproportionately to the number of new beds available during this time. (Table 2).

The proportion of women, among those detained, has not changed, and ranged between 4% and 5%. This may be an indication that women -- although drinking more than previously -- have not adopted the heavier consumption patterns of males, and drink in their own more moderate way.

TABLE 2

PEOPLE DETAINED TO SOBER UP AT POLICE STATIONS AND SOBERING-UP STATIONS, POLAND, 1956-1981

Year	a Sobering-up Stations (N)	b Number Detained at Sobering-up (1000s)	c Number Detained Police (1000s)	d Total* Number Detained (1000s)	e Percent** at Sobering-up Stations	f Rate per 100,000 Adults 15 and Older
1956	1 (82 beds)	7.6	-	-	-	-
1957	8	39.9	-	-	-	-
1958	13	83.6	-	-	-	-
1959	15	92.0	289.9	381.9	24.1%	1,940
1960	16 (522 beds)	102.3	265.4	367.8	27.8	1,856
1961	21	113.6	240.5	354.0	32.1	1,762
1962	22	118.3	195.6	314.0	37.7	1,534
1963	22	122.3	213.8	336.0	36.4	1,601
1964	22	129.7	191.8	321.4	40.3	1,495
1965	22 (940 beds)	144.2	152.2	296.5	48.6	1,354
1966	22	157.4	96.0	253.4	62.0	1,134
1967	23	171.8	89.7	261.5	65.7	1,143
1968	24	172.4	93.1	265.4	64.9	1,137
1969	26	184.8	89.1	273.9	67.5	1,151
1970	27 (1,178 beds)	214.1	91.6	305.7	70.0	1,274
1971	27	223.9	146.3	370.3	60.5	1,518
1972	28	238.6	147.7	386.3	61.8	1,553
1973	30	247.6	162.3	409.9	60.4	1,605
1974	33	247.1	136.4	383.5	64.4	1,493
1975	35 (1,517 beds)	292.0	136.1	428.1	68.2	1,646
1976	41	307.4	161.8	469.2	65.5	1,784
1977	45	331.2	165.6	496.9	66.7	1,873
1978	47	310.2	156.4	466.7	66.5	1,748
1979	49	302.4	139.9	442.2	68.4	1,646
1980	51 (1,988 beds)	317.8	139.0	456.8	69.6	1,690
1981	52 (2,013 beds)	195.3	79.7	275.0	71.0	1,011

*Sum of b + c does not consistently equal d because of roundings.

**Based on raw data.

Source: "Walka z Alkoholizmem" (Fight Against Alcoholism), 1962, no. 1, data of the MO Chief HQ; Ministry of Home Affairs (see J. Moskalewicz, 1980: Table 17).

Although the number of juveniles (under age 19) detained has risen from 2,782 in 1961 to 5,571 in 1975, Table 3 indicates that the juvenile proportion of those detained has not increased. This implies that growth in harmful drinking among juveniles was not greater than in other age groups. Taking into account the differences in the age categories in Table 3, the largest number of sobering-up station clientele consists of young males in their 20s.

Those in the middle age group (30-50) are not as strongly represented in the sobering-up station clientele; this may be a function of differences in drinking style compared to younger males. Although the proportion of this age group (as presented in Table 3) is somewhat higher than that of the previous one (19-29), it should be noted that the older category spans 20 years whereas the younger spans 10 years.

Individuals are also detained in police stations to sober up if sobering-up stations are full or there are none in a given area. The number of cases dropped between 1959 and 1969, and increased from 1970 to 1973, although never reaching the totals during the 1960s. The total number of persons detained in sobering-up stations and in police stations (per 100,000 inhabitants aged 15 and over) was lower in 1980 (1,650) than it had been in 1959 (1,940). However, in 1966 the rate dropped to a low of 1,134 per 100,000. From 1967 onward a slight increase is noted which corresponds with the revival of traditional drinking preferences (vodka being the main beverage choice).

In general, the volume of detentions in sobering-up stations and in police stations has not kept pace with the volume of alcohol consumed, nor with the consumption of vodka, the traditional beverage for heavy consumption. The number of people detained per 1,000 litres dropped two-fold from 3.3 in 1959 to 1.6 in 1980. It is possible that new drinking comportments, and new groups of drinkers which are responsible for the growth in alcohol consumption, are not associated with those heavy drinking contexts or styles which lead to interaction with public order authorities.

Charges for Liquor Misdemeanours

A third statistic, related to public drunkenness, is the number of convictions by the misdemeanour court for liquor misdemeanours. These charges are mainly for a breach of the peace and public order. The misdemeanour court is an extra-judicial administration body that can pass an arrest decision, an imprisonment up to three months, a fine up to 5,000 zlotys (which was the equivalent of an average monthly pay at the end of the 1970s) or hand down a reprimand.

The statistics which have been available from 1953, indicate a decline in 1956, when the law on combating alcoholism was enacted, followed by an increase over three years. Thereafter the number of charges declined and during most of the 1960s stayed at a low level. An increase evident in the early 1970s did not attain the level of the early 1950s. The decreases were largely as a result of amnesties, especially in 1956, 1964 and 1974 (Table 4).

The rate of charges for liquor misdemeanours per 100,000 adults decreased from 1,239 in 1953 to 683 in 1980, and then to 408 in 1981. These changes appear to be connected with the increasing number of

TABLE 3

PEOPLE DETAINED IN SOBERING-UP STATIONS, BY AGE, POLAND, 1962-1980

Year	Percent by Age				Total (N)
	Under 19	19-29	30-50	Over 50	
1962	1.3	42.6	45.9	10.2	(118,349)
1965	1.3	33.7	53.8	11.2	(144,217)
1970	1.3	33.7	55.6	9.4	(214,127)
1975	1.6	38.0	49.9	10.5	(291,958)
1980	1.2	37.8	50.5	10.5	(317,768)

Source: Data of the Socio-Administrative Department of the Ministry of Internal Affairs.

TABLE 4

CHARGES FOR LIQUOR MISDEMEANOURS, POLAND, 1953-1981

Year	Charges for Liquor Misdemeanours* (1000s)	Rate Per 100,000 Adults**	Rate per 1,000 Litres of Alcohol Consumed
1953	229.0	1,239	2.8
1954	280.0	1,495	3.2
1955	243.2	1,284	2.7
1956	176.5	921	1.9
1957	213.7	1,106	1.9
1958	228.2	1,172	2.1
1959	228.1	1,159	1.9
1960	177.3	895	1.6
1961	134.0	667	1.1
1962	128.7	629	1.1
1963	143.7	684	1.2
1964	121.7	566	1.0
1965	134.8	615	1.1
1966	146.7	656	1.1
1967	143.8	628	1.0
1968	152.1	651	1.0
1969	120.0	504	0.7
1970	159.4	664	1.0
1971	205.6	843	1.1
1972	187.9	756	1.0
1973	209.8	829	1.0
1974	169.7	661	0.8
1975	186.5	717	0.8
1976	217.9	829	0.8
1977	187.4	706	0.7
1978	202.5	759	0.7
1979	187.0	696	0.7
1980	184.7	683	0.6
1981	110.9	408	0.5

* The majority of the charges are for "the disturbance of the public order under the influence of alcohol."

** Persons aged 15 and older.

Sources: Pacholarz, E. - "Wykroczenia alkoholowe" (Alcohol misdemeanours) in: "Zagadnienia Karno-Administracyjne" (Penal-Administrative Issues), 1968 no. 4, pp. 18-26. GUS statistical yearbooks 1969-1976.

sobering-up stations. Many persons who would have earlier been subjected to repeated charges, probably turned up in sobering-up stations. The rate of charges per volume of alcohol consumed (1,000 litres) decreased as well: from 3.2 in 1954 to 0.5 in 1981.

Other Liquor Offences

Charges considered here include harassing other persons (specifically "while intoxicated", until 1969) and undertaking actions when intoxicated which endanger human life or health. For most years less than 5% of the total involved the latter, more serious charge (Table 5). The rate of these offences decreased from 55.3 to 45.6 per 100,000 persons aged 15 and over. A much stronger downward tendency is observed when the rate per 100,000 litres of alcohol is determined.

Data on liquor misdemeanours and liquor offences support the interpretations presented earlier. It appears that for every year in the period of this study, the same amount of alcohol out of the total consumption can be blamed for heavy drinking episodes which lead to visible drunkenness or indecent behaviour. In other words, the growth in alcohol consumption levels is linked to a qualitative change in drinking practices and a relative contraction in traditional heavy drinking patterns connected with deep intoxication and indecent behaviour.

Aggressive Offences

The statistics available on aggressive offences involving alcohol indicate that the percentage of suspects acting under the influence of alcohol increased from 1964 to 1978 for the more serious offences of homicide and rape. By 1978, between 50% and 70% of the suspects in cases of bodily injury, fighting, homicide and rape were intoxicated at the time the crime was allegedly committed (Table 6).

Although data on the proportion involving alcohol is only available from 1964, information on the total number of offences, by type, is available from 1954.* A decline in the number of aggressive offences is evident, except for rape and homicide since 1964. However, the decline was irregular as the rate of aggressive offences between 1954 and 1960 was high, stabilizing during the 1960s, without any clear tendency in the 1970s. This trend is similar to that of general criminality in Poland (Jasinski, 1978b).

The preceding data suggest that the dynamics of aggressive offences and that of alcohol consumption were similar through the first part of the period of study, although later opposite tendencies emerged. In recent years there has been an ardent discussion in Poland on the influence of alcohol on criminality. The views vary from recognizing a close relationship between average consumption and the number of offences (Tolkan, 1979) to the negation of a possibility of finding such a relationship through statistical methods (Jasinski, 1978a).

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* For some years data are not available, and in the case of body injury, changes in data collection methods make it impossible to complete the series.

TABLE 5

OTHER LIQUOR OFFENCES, POLAND, 1962-1975

Year	"Harassing"[a]	"Endangering Life"[b]	Total	Rate per 100,000 Adults	Rate per 10,000 Litres Alcohol
1962	11,091	229	11,320	55.3	9.6
1963	13,811	436	14,247	67.9	11.6
1964	12,671	291	12,962	60.3	10.7
1965	13,420	269	13,689	62.5	10.7
1966	15,685	338	16,023	71.7	11.7
1967	11,842	328	12,170	53.2	8.3
1968	13,329	328	13,657	58.5	8.6
1969	14,283	-	-	-	-
1970	13,050	419	13,469	56.1	8.0
1971	14,481	322	14,803	60.7	8.1
1972	12,925	329	13,254	53.3	6.7
1973	11,901	608	12,509	49.5	5.8
1974	10,877	837	11,714	45.6	5.5
1975	-	824	-	-	-

[a] Harassing other person after alcohol use.

[b] Endangering human life or health after alcohol use.

Source: Civil Militia HQ

TABLE 6

PERCENTAGE OF AGGRESSIVE OFFENCES COMMITTED WHILE UNDER THE INFLUENCE OF ALCOHOL, POLAND, 1964-1975

Year	Homicide	Unintentionally Causing Death	Bodily Damage	Fighting or Battery	Rape
1964	33.5 (464)*	21.4 (392)	53.9 (-)	50.0 (6,628)	28.7 (1,226)
1965	39.3 (488)	23.9 (415)	55.8 (-)	49.9 (7,274)	32.0 (1,462)
1966	41.8 (542)	26.6 (375)	57.1 (-)	52.6 (5,955)	35.9 (1,895)
1967	51.3 (541)	19.8 (386)	59.2 (-)	54.3 (5,550)	38.2 (2,084)
1968	49.4 (496)	34.2 (375)	60.7 (-)	55.5 (4,840)	40.8 (1,675)
1969	- (524)	- (439)	- (-)	- (4,970)	- (2,208)
1970	53.9 (486)	21.7 (435)	56.9 (16,318)	58.3 (4,652)	53.2 (1,926)
1971	55.9 (552)	25.8 (286)	57.6 (18,308)	60.2 (6,400)	55.3 (2,280)
1972	52.6 (566)	18.7 (251)	50.0 (16,032)	53.6 (6,023)	55.6 (2,265)
1973	57.4 (673)	19.5 (266)	53.7 (14,971)	58.9 (6,217)	55.3 (2,474)
1974	56.6 (685)	17.6 -	51.9 (13,002)	57.3 (5,599)	56.5 (1,996)
1975	59.4 (605)	23.9 -	53.3 (12,770)	58.1 (5,448)	56.9 (1,957)

* The number of offences committed in each category in a given year is shown in brackets.

Source: Civil Militia HQ

ALCOHOL AND TRAFFIC

Drinking and Driving Offences

Driving with a blood alcohol content of 0.2 per mille and over is considered a misdemeanour in Poland. The rate of drinking and driving misdemeanours per 1,000 registered vehicles indicates an increase from 1962 to 1966, followed by a decline. The pattern with regard to drinking and driving cases per 10,000 litres of alcohol consumed is similar: a rise to a peak in 1966 followed by a decline with a moderate increase in 1973 (Table 7).

The increase in these rates in 1973, in the midst of a general decline, is likely to have resulted from the change in the law. Previously the cases of heavier intoxication while driving (0.5 per mille and more) were considered as crimes. With the rising number of motor vehicles, the courts devoted more and more time to dealing with these cases. Also, criminal statistics were increasingly influenced by drunken driving crimes. These dynamics contributed to the creation of a new regulation which came into effect in 1971 and which made all acts of drinking and driving misdemeanours -- including those with blood alcohol content of over 0.5 per mille.

Road Accidents Involving Alcohol

By 1974, the total number of road accidents in Poland had increased over three times the number in 1954. However, the percentage of accidents involving alcohol actually decreased slightly during the same time from 18.7% to 12.8% of all accidents. For fatal accidents the percentage involving alcohol fluctuated from 1954 to 1974, with a high of 26.2% in 1968, and the lowest (15.4%) occurring in 1973. The proportion of injury accidents declined between 1954 and the early 1960s, and since then has been stable until 1974. However, all three proportions demonstrated an increase between 1974 and 1975. The increases were greater for the total and fatal accident proportions, than was the case for injury accident proportion involving alcohol (Table 8).

The dramatic increases apparent in 1975 must be attributed to a new system of recording road accident statistics introduced that year. Until 1975 statistics included fatal, non-fatal and property damage accidents which resulted in over 1,000 zlotys damage. To be recorded as a fatal accident, the fatality had to occur at the accident site or within 48 hours of the accident. In 1975 the definition of a fatal accident was changed to include those in which deaths occurred at the scene of the accident or within 30 days. Property damage accidents were no longer included in the statistics. As a result of these changes the general number of accidents declined while the number of fatal accidents and accidents resulting in injury grew (Figure 3).

ALCOHOL AND ILLNESS AND DEATH

The role of morbidity statistics in the evaluation of problems related to alcohol is difficult to specify. Like the statistics on causes of death, they are affected by changes in the classification of diseases. In Poland changes in such classification took place in three periods: in 1951 with the introduction of Disease Nomenclature, in 1959 with the introduction of the International

TABLE 7

DRINKING AND DRIVING OFFENCES, POLAND, 1962-1974

Year	Total Number of Drinking and Driving Offences	Rate per 10,000 Litres of Pure Alcohol Consumed	Rate per 1,000 Registered Motor Vehicles
1962	38,829	3.3	26.2
1963	58,564	4.8	34.7
1964	75,342	6.2	40.2
1965	89,922	7.0	43.2
1966	101,521	7.4	45.3
1967	103,199	7.0	43.4
1968	103,383	6.4	40.6
1969	-	-	-
1970	-	-	-
1971	-	-	-
1972	126,565	6.4	39.4
1973	143,422	6.6	41.6
1974	125,055	5.8	33.6

Source: GUS statistical year books.

TABLE 8

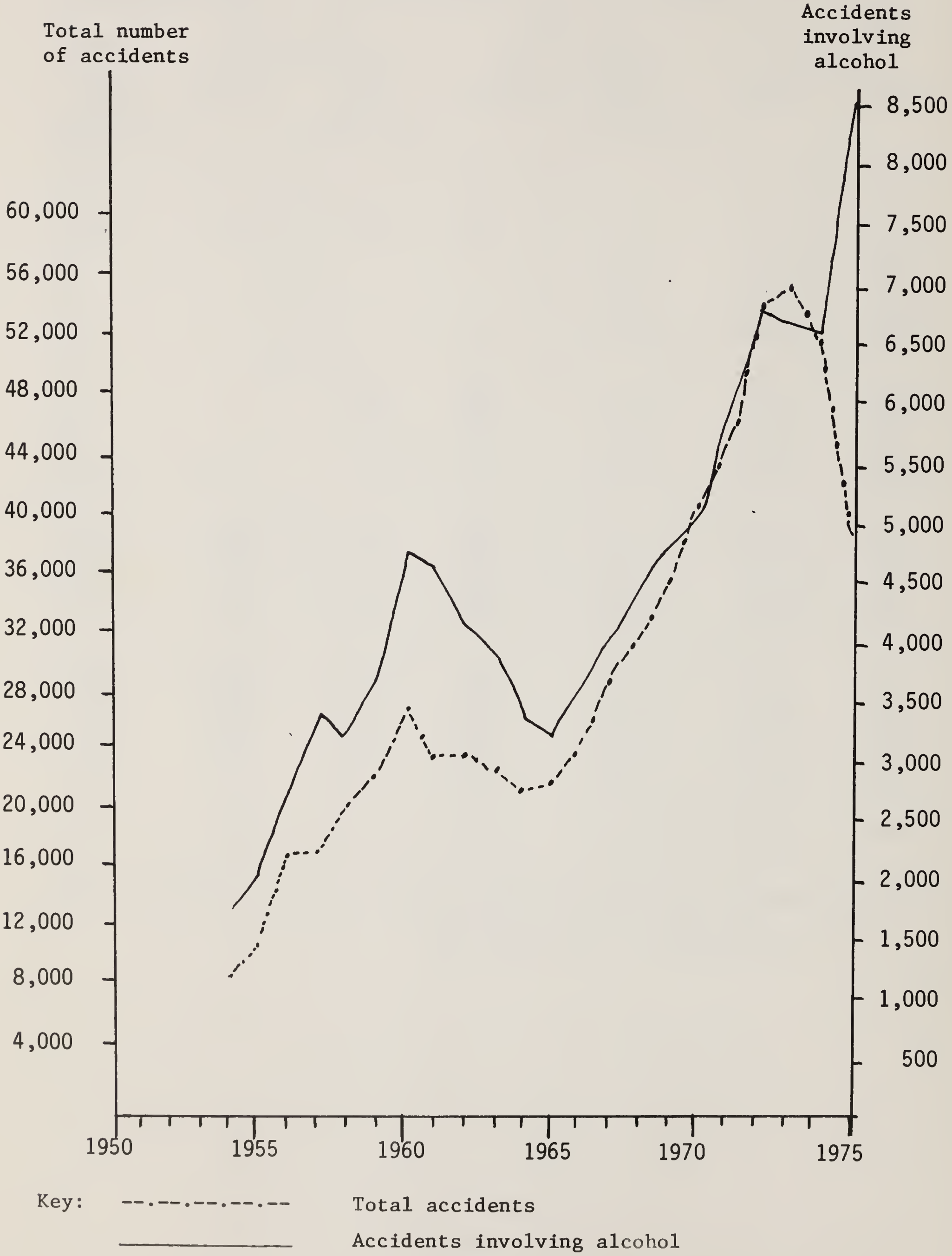
ROAD ACCIDENTS INVOLVING ALCOHOL, POLAND, 1954-1975

	Total		Fatal Accidents		Injury Accidents	
Year	Number	As a % of all Road Accidents	Number	As a % of all Fatal Accidents	Number	As a % of all Injury Accidents
1954	1,695	18.7	332	23.2	1,152	21.0
1955	1,979	17.7	312	21.1	1,314	21.3
1956	2,346	15.8				
1957	3,272	19.6				
1958	3,136	15.2				
1959	3,655	16.0				
1960	4,728	17.1	453	22.5		
1961	4,585	19.1	660	26.1		
1962	4,113	17.1	388	17.0		
1963	3,863	16.4				
1964	3,336	15.2	479	20.7	3,218	15.5
1965	3,202	14.2	503	20.3	3,061	14.8
1966	3,659	14.8	594	21.7	3,439	14.8
1967	4,059	13.6	524	17.5	3,811	14.0
1968	4,491	14.0	636	26.2	4,175	14.2
1969	4,720	12.9				
1970	5,141	12.3	598	17.4	4,677	13.4
1971	5,872	12.6	652	17.2	5,349	13.9
1972	6,788	12.2	730	17.2	6,203	14.3
1973	6,727	12.0	649	15.4	6,228	14.2
1974	6,667	12.8	720	18.3	6,153	15.0
1975	8,484	21.5	1,691	30.0	8,993	19.4

Sources: "Walka z Alkoholizmem" (Fight Against Alcoholism), 1963, No. 9-10, p. 16; and data from Civil Militia HQ.

FIGURE 3

ROAD ACCIDENTS REGISTERED BY THE POLICE, POLAND, 1954-1975



Classification of Diseases (ICD - Revision 7) and in 1970 (ICD - Revision 8). It must also be considered that morbidity statistics are influenced by the accessibility to hospital treatment, which has improved considerably since the early 1950s.

In addition to alcoholism and alcoholic psychosis, in which the excessive use of alcohol is an overt condition for applying the label, several other causes of death can be directly or indirectly linked with alcohol use. Alcohol poisoning is directly linked with consumption of alcohol, but it is difficult to use the incidence of alcohol poisoning to generalize about the use of alcohol as the intentionality, frequency and meaning of such heavy consumption is not readily known. Deaths due to liver cirrhosis is also of interest because of the correlation between this statistic and alcohol consumption in the Polish society (Wald *et al.*, 1982). The number of suicides involving alcohol is also relevant when considering mortality rates with respect to alcohol.

Alcoholism

Statistics on first admissions to hospitals due to alcoholism are available from 1956 (Moskalewicz, 1979). The rate increased noticeably in 1957 and 1959, after successive laws on combating alcoholism were put into effect and after the separate network of centres and hospital wards for alcoholism treatment was expanded. The increase in subsequent years was generally steady. There was a nine-fold increase over 25 years: from 4.1 to 27.4 per 100,000 inhabitants aged 20 and older (Table 9). In 1981 a drop in alcoholism hospital admissions was noted; during this year there was a 25% decrease in alcohol consumption.

Alcoholic Psychosis

The data on first admissions to hospital due to alcoholic psychosis are considered a more reliable indicator of alcohol-related problems than is the case for alcoholism statistics. As discussed in detail by Wald and Jaroszewski (1978), these statistics are considered a useful estimation of the range of abusive drinking. The rate of first admissions for alcoholic psychosis per 100,000 inhabitants age 20 and over follows a somewhat irregular increase from 3.7 in 1956 to 7.1 in 1981.

In Figure 4 consumption data is presented alongside the rate of first admissions for alcoholism and alcoholic psychosis. Although the trend lines are generally upward for all three series, the short-term patterns are not parallel, particularly during the late 1950s. However, both alcohol problem indicators display a high degree of sensitivity to the sharp drop in alcohol consumption in 1981.

Liver Cirrhosis

The number of Poles who died of cirrhosis of the liver, per 100,000 inhabitants aged 20 and over, rose from 9.5 in 1951 to 11.2 in 1958. The rate of 4.9 in the following year, 1959, represents a dramatic drop. This can be explained by the fact that until 1959 liver cirrhosis was considered together with all other liver ailments (except liver lithiasis) in the Nomenclature of Diseases and Causes of Death. In 1959 the International Classification of Diseases was introduced which lead to liver cirrhosis figures being presented separately for

TABLE 9

FIRST ADMISSIONS TO HOSPITALS PER 100,000 INHABITANTS AGED 20 AND OLDER, POLAND, 1956-1981

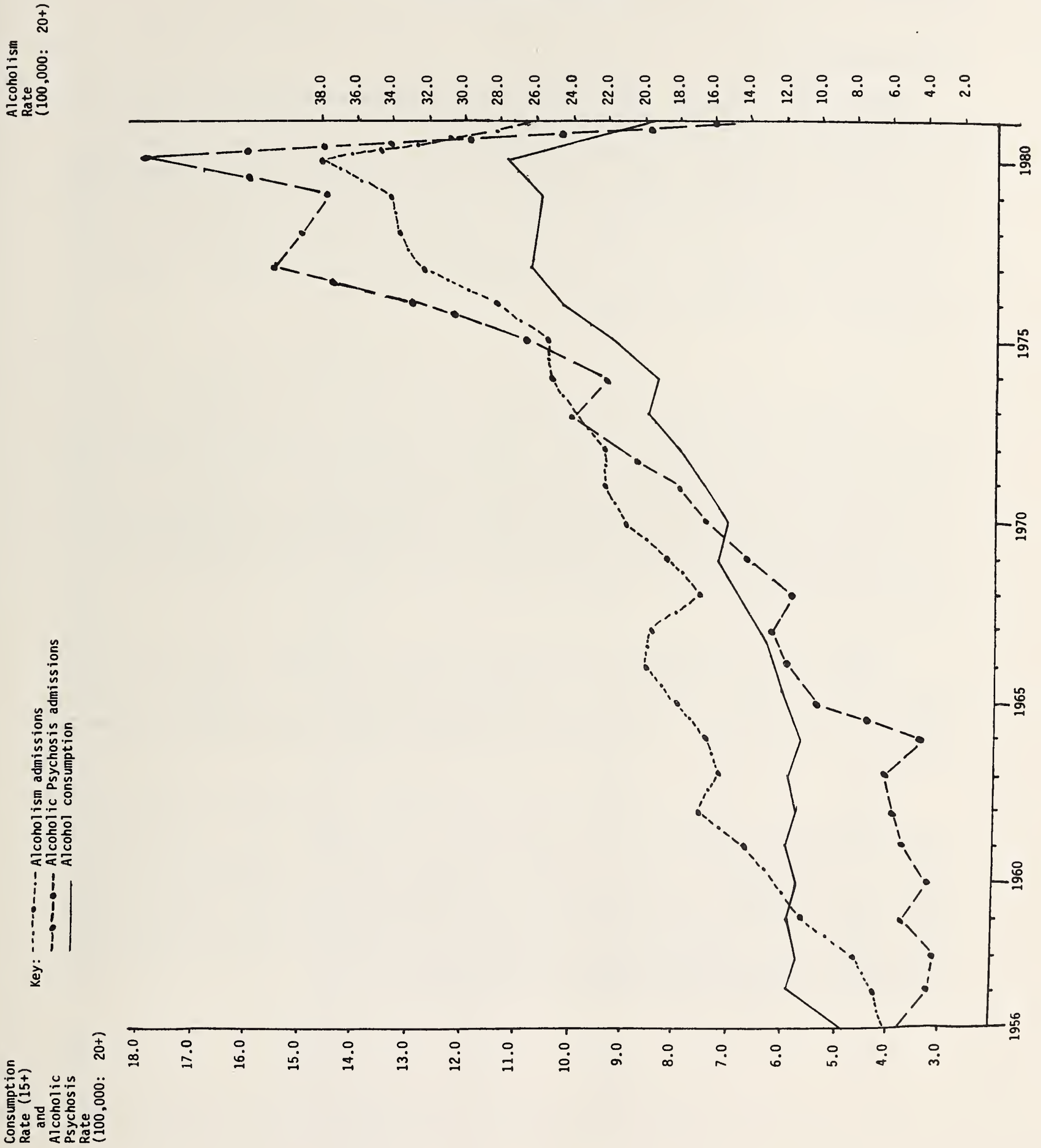
Year	Rate Due to Alcoholism	Rate Due to Alcoholic Psychosis	Rate Due to Consumption*
1956	4.1	3.7	5.0
1957	6.6	3.2	5.9
1958	7.8	3.1	5.7
1959	10.8	3.7	5.9
1960	12.2	3.3	5.7
1961	13.9	3.7	5.9
1962	16.5	3.9	5.7
1963	15.3	4.1	5.8
1964	16.1	3.4	5.6
1965	17.9	5.3	5.9
1966	19.6	5.9	6.1
1967	19.4	6.2	6.4
1968	16.5	5.8	6.9
1969	18.3	6.6	7.2
1970	20.7	7.4	7.0
1971	21.9	7.9	7.4
1972	21.9	9.1	7.9
1973	23.6	9.9	8.5
1974	25.1	9.3	8.3
1975	25.2	10.8	9.1
1976	27.9	12.9	10.1
1977	32.1	15.5	10.7
1978	33.6	15.0	10.6
1979	33.9	14.5	10.5
1980	37.9	18.0	11.1
1981	25.9	7.1	8.5

* Per person aged 15 and older.

Source: Psychoneurological Institute

FIGURE 4

FIRST ADMISSIONS TO HOSPITALS FOR ALCOHOLISM AND ALCOHOLIC PSYCHOSIS, AND RATE ALCOHOL CONSUMPTION POLAND, 1956-1981



that year. It should also be noted that Polish statistics do not distinguish a separate cause of death for "liver cirrhosis with alcoholism." In general, the death rate due to cirrhosis has increased since 1951, most dramatically in males, to reach a high of 17.9 per 100,000 adult inhabitants (aged 20 and over) in 1980 (Table 10).

Alcohol Poisoning

The number of deaths due to alcohol poisoning grew considerably from 1959 to 1975, from 0.4 deaths per adult inhabitant (age 20 and over) to 4.0 deaths per adult (Table 10). During this time the rate almost tripled for men and doubled for women (Moskalewicz, 1979). The trend for this statistic largely corresponds to the rate of alcohol consumption for the period; decreases in alcohol poisoning rates are notable in 1963, 1970 and 1974, years in which alcohol prices rose and consumption declined (Table 10). It should be noted that the statistics do not distinguish the poisoning with ethyl alcohol from other alcoholic poisoning, especially that with methyl alcohol.

Suicide

Two kinds of statistics are available in Poland related to suicides. One is based on medical sources for causes of death and includes the number of suicides committed (see Moskalewicz, 1979). Militia-attorney statistics include both attempted suicides and committed suicides registered by the MO (Civic Militia). The first source is generally considered best for international comparisons, while the second, Militia statistics, include data on suicide acts involving alcohol which is of considerable interest here. However, Jarosz (1975) has pointed out that the Militia statistics do not reliably reflect the range and structure of the phenomenon of suicide.

Deaths due to suicide per 100,000 adult inhabitants (age 20 and over) taken from medical sources indicate an increased rate from 1950 to 1975, from 10.7 deaths to 17.1 deaths. However, two periods of decline are noticeable: 1953 to 1956 and 1972 to 1975. Of interest is the year 1962 which saw a dramatic decrease in the suicide rate amidst an otherwise steady climb from 1957 to 1969.

Suicide acts, both attempted and committed, as registered by the Civic Militia increased from 816 in 1954 to 3,686 in 1975. Data on the percentage of suicides involving alcohol are available between 1970 and 1975. During these years the percentage of suicide acts committed under the influence of alcohol were 34.4, 37.7, 36.4, 38.3, 38.4 and 41.7 percent, respectively. The increases from 1970 to 1975 represent a 21.2 percent rise, while the number of suicide acts (attempted and committed) per 100,000 adult inhabitants (age 20 and over) actually decreased during this time by 22.7 percent.

TABLE 10

DEATHS DUE TO LIVER CIRRHOSIS AND ACUTE ALCOHOL POISONING PER 100,000 INHABITANTS AGED 20 AND OLDER, POLAND, 1951-1981

Year	Liver Cirrhosis	Acute Alcohol Poisoning	Rate of Alcohol Consumption*
1951	9.5	1.6	4.2
1952	10.9	1.6	4.2
1953	11.1	1.6	4.4
1954	10.8	1.5	4.7
1955	11.1	1.7	4.8
1956	10.8	1.6	5.0
1957	11.9	2.0	5.9
1958	11.2	2.0	5.7
1959	4.9	0.4	5.9
1960	5.0	0.7	5.7
1961	6.4	1.2	5.9
1962	7.9	1.6	5.7
1963	9.6	1.4	5.8
1964	9.8	1.6	5.6
1965	10.0	2.0	5.9
1966	11.0	2.3	6.1
1967	11.5	2.3	6.4
1968	12.1	3.2	6.9
1969	12.9	3.3	7.2
1970	13.3	3.2	7.0
1971	14.2	3.6	7.4
1972	14.5	3.8	7.9
1973	14.8	4.0	8.5
1974	14.5	3.8	8.3
1975	15.3	4.0	9.1
1976	16.1	4.7	10.1
1977	17.0	5.6	10.7
1978	17.7	5.4	10.6
1979	17.3	-	10.5
1980	17.9	-	11.1
1981	15.6	3.5	8.5

* Per persons aged 15 and older

Source: Central Statistical Office.

CONCLUSIONS

Despite the transformation in data reporting systems, legislation and enforcement, all representing the changing perception and varying social response to alcohol problems, the Polish statistics of alcohol-problem display a high degree of sensitivity to changes in the levels of alcohol consumption.

However, negative, short-term consequences of drinking have not kept pace with volume of alcohol consumed in the country. In other words the rates various indicators of heavy intoxication (public drunkenness, aggressive offences et cetera) per 1000 litres of alcohol consumed often decreases against the trends in alcohol consumption. It may be argued that the growth in alcohol consumption was a result of an expansion of a new, less aggressive drinking practices and behaviors that supplemented traditional drinking patterns connected with high intoxication and improper behaviour.

It is clear that 1981 is unique in the post-war alcohol history in Poland. Due to the short supply of alcohol, rationing of spirits was introduced. Per capita consumption dropped from 8.4 to 6.4 litres of pure ethanol. Available problem indicators also showed a rapid decline. At first glance this seems to be an excellent example of a strong relationship between consumption level and consequences of drinking. However, many other factors also contributed to this visible decline in the prevalence of alcohol-related problems. For example, the drop in alcohol psychosis hospital admissions may partly be explained by a decrease in the total number of psychiatric hospital admissions. A lower number of sobering-up station clientele is likely related to the deteriorated police activities in this respect. The decline in liver cirrhosis deaths may also be influenced by a postponed effect of an earlier levelling off in consumption which has been registered in Poland since 1978. All in all, findings concerning 1981 are rather preliminary and require further attempts at explanation which take into account the complexities of these recent changes.

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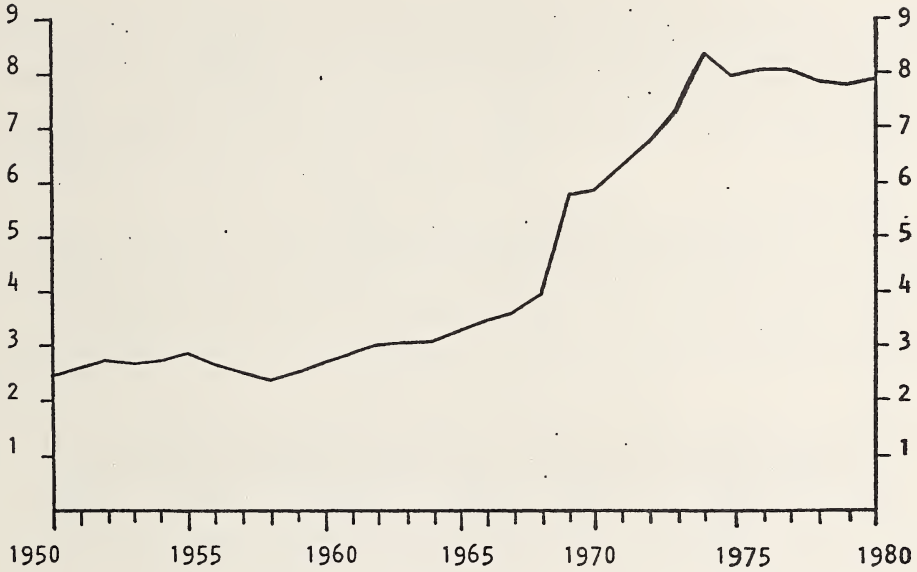
FIGURE 1

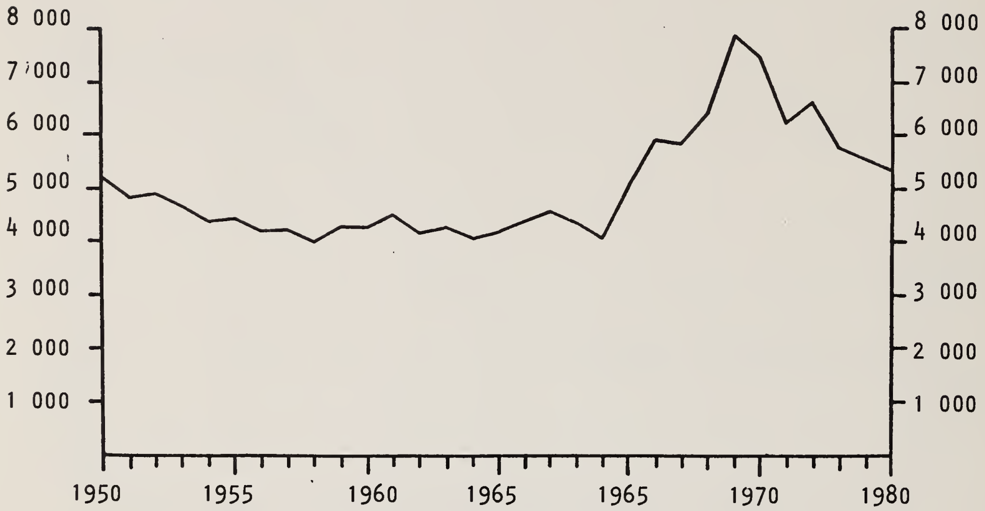
CONSUMPTION OF ALCOHOLIC BEVERAGES IN LITRES OF 100% ALCOHOL PER POPULATION AGED 15 YEARS AND OLDER, FINLAND, 1950-1980



Source: Alko's Year Book 1950-1980.

FIGURE 2

ARRESTS FOR DRUNKENNESS PER 100,000 INHABITANTS AGED 15 YEARS AND OLDER, FINLAND, 1950-1980



Sources: Official Statistics of Finland XXIII A:87-117 Criminality known to the police 1946-1980; Central Statistical Office of Finland.

police becoming more lenient in the last two years of the 1960s (Ahlström and Österberg, 1981). This means that, had the police's arrest practices remained the same during the second half of the 1960s, the number of arrests for drunkenness would either have risen somewhat from 1967 to 1969, or that 1968 and 1969 would not have differed from 1967. Secondly, the number of arrests for drunkenness would have fallen evenly in the second half of the 1970s if there had not been a police strike in early 1976.

In addition, minor annual variations in police arrest practices are evident nationally or locally. For example, due to fluctuations in Helsinki the increase in the rate of arrests for drunkenness from 1969 to 1970 slightly overestimates, and from 1971 to 1972 slightly underestimates, the actual increase in the number of cases of drunkenness in those years. Moreover, provincial data would seem to indicate that police arrest practices tended to become more restrictive in the early 1970s (Ahlström and Österberg, 1981).

In the 1950s the number of cases of drunkenness decreased both absolutely and in relation to alcohol consumption (Figure 3). The increase in the number of cases of drunkenness in 1960s was much less marked than the increase in alcohol consumption. In the first half of the 1970s, on the other hand, the increase in the number of cases of drunkenness kept pace with changes in alcohol consumption. After 1974 the number of cases of drunkenness decreased steadily in absolute terms and in relation to alcohol consumption.

It is noteworthy that the arrest-consumption ratio depicted in Figure 3 is stable between regions, beverage classes and mode of alcohol sales. First, the arrest-consumption ratio in each province follows almost exactly the same course -- and naturally, the same course as the aggregated national arrest-consumption ratio (Ahlström and Österberg, 1981). Secondly, a similar trend in the arrest-consumption ratio is also evident when arrests and consumption data are specified according to beverage class and mode of distribution (Österberg, 1979b; Ahlström and Österberg, 1981). For example, the number of arrests for drunkenness related to the consumption of distilled spirits declines in the 1950s and 1960s, remains constant or rises somewhat in the first half of the 1970s, and again declines in the second half of the 1970s.

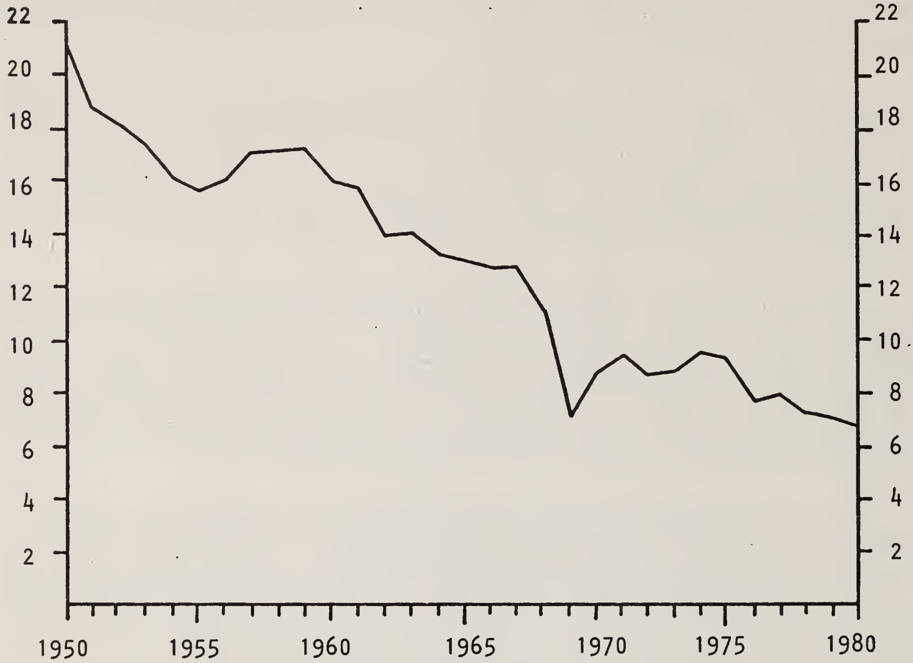
Changes in the number of arrests for drunkenness seem mainly to reflect quantitative changes in drunkenness; in any case, statistics on arrests, considered together with the changes in police's arrest practices, give a firm picture about changes in the number of cases of drunkenness in 1950-1980. Furthermore, the ratio between arrests and consumption can be thought of as describing changes in drinking habits. Considered from this point of view, the ratio presented in Figure 3 can be regarded as showing a continual improvement in drinking habits in the 1950s, in the 1960s, and in the second half of the 1970s as well, and as indicating virtually no change during the first half of the 1970s.

OFFENCES OF VIOLENCE

Using statistics on violent offences as an indicator of changes in alcohol problems involves a host of complications. First, the nature of the links between the use of alcohol and violent crime is ambiguous. Violent offences are committed

FIGURE 3

ARRESTS FOR DRUNKENNESS RELATIVE TO ALCOHOL CONSUMPTION; ARRESTS PER 1,000 LITRES OF 100% ALCOHOL, FINLAND, 1950-1980



Sources: Official Statistics of Finland XXIII A:87-117 Criminality known to the police 1946-1980; Alko's Year Book 1950-1980.

by both drunk and sober people. The person who has used alcohol may be either the offender or the victim. Moreover, alcohol's role is different in unpremeditated and premeditated violence. Secondly, it is rather difficult to describe the changes in the number of violent offences which took place between the late 1960s and the early 1970s. An amendment to criminal law was made in 1970 and the coverage of various crime categories was altered, producing breaks in most of the statistical series on violent crime. In addition, it appears that this amendment was not introduced everywhere at the same time (Crime situation, 1974).

In Finland, the numbers of cases of manslaughter and gross assault and battery have been used as indicators of alcohol-related violence. The main reason is that the proportion of such crimes which are detected, and consequently is entered into statistical series, fluctuates less for serious than for less serious crimes (Verkko, 1942; Kuusi, 1952). However, as a consequence of the 1970 amendment, the statistics on manslaughter and gross assault and battery are not comparable for the whole of the 1950-1980 period. The available statistical series and several studies show that whereas the number of serious offences declined during the 1950s and remained almost unchanged during the 1960s, the number of serious violent crimes seems to have increased quite markedly in the early 1970s, and stabilized later in the decade (cf. e.g., Aromaa, 1972; Pyrrö, 1973; Törnudd, 1978).

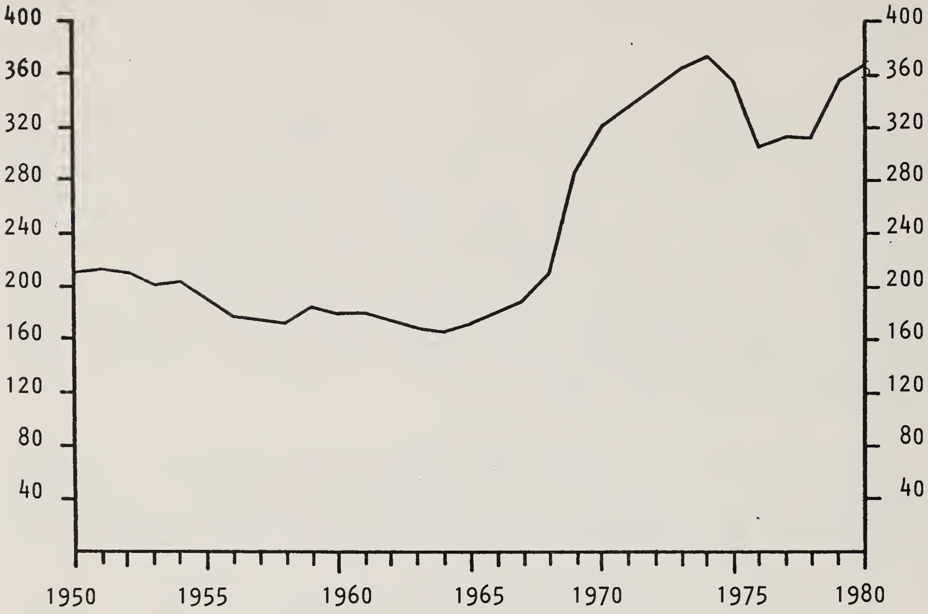
The per adult rate of assault and battery cases recorded by the police declined gradually throughout the 1950s until the mid-1960s and then increased sharply (Figure 4). Although assault and battery became less common after 1974, this trend came to an end in the late 1970s and the rate is currently on the upswing.

The dramatic increase in the rate of assault and battery cases in the late 1960s, especially in 1969, kept pace with alcohol consumption (Figure 5). However, overall, a decline in the assault-consumption ratio is evident. The changes in the assault-consumption ratio during the 1950s and first half of the 1960s is similar to the changes in arrest-consumption ratio during this period (see Figure 3). The differences in these ratios in the late 1960s might be explained as follows: The majority of offenders for assaults and batteries are below 30 years of age and, in Finland, as in many countries, an exceptionally large number of people were born after the war. When these people began to enter the age of majority in 1960s, they had a greater influence on the number of assaults and batteries than on the number of arrests for drunkenness or the amount of alcohol consumption. The increase in the number of assaults and batteries in the late 1960s was, therefore, greater than the increase in the consumption of alcoholic beverages or the number of arrests for drunkenness. In the first half of the 1970s, assault and battery cases fell both in relation to alcohol consumption and arrests for drunkenness as the post-war generation began to reach the age of 30.

A second explanation for the lack of harmony in the arrest-consumption ratio and the assault-consumption ratio in the late 1960s and in the early 1970s lies in the police's arrest practices. For example, the more lenient arrest practices of late 1960s meant that fewer people were arrested for drunkenness. At the same time, however, some of those people who would have been arrested had the police not followed the more lenient arrest practice, were arrested

FIGURE 4

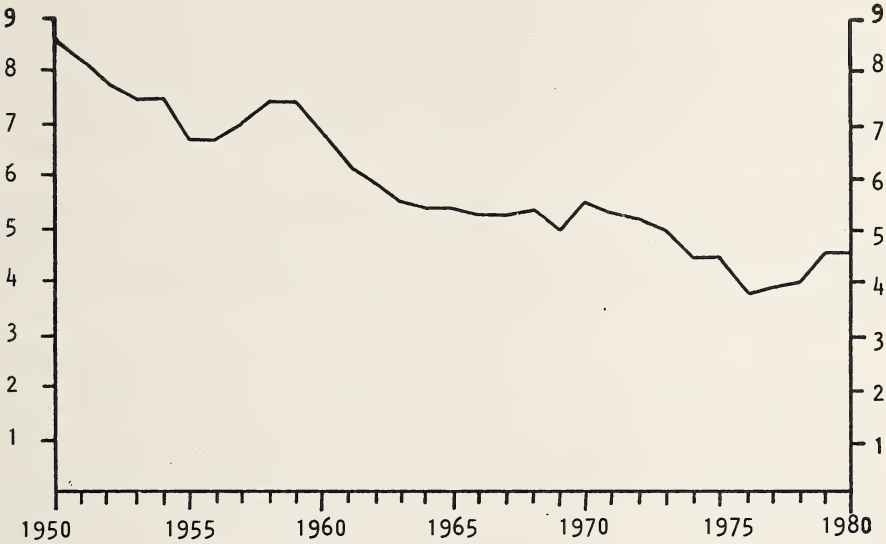
ASSAULTS AND BATTERIES PER 100,000 INHABITANTS AGED 15 YEARS AND OLDER, FINLAND, 1950-1980



Sources: Official Statistics of Finland XXIII A:87-117 Criminality known to the police 1946-1980; Central Statistical Office of Finland.

FIGURE 5

ASSAULTS AND BATTERIES RELATIVE TO ALCOHOL CONSUMPTION; ASSAULTS AND BATTERIES PER 10,000 LITRES OF 100% ALCOHOL, FINLAND, 1950-1980



Sources: Official Statistics of Finland XXIII A:87-117 Criminality known to the police 1946-1980; Alko's Year Book 1950-1975.

because they committed a violent offence (Österberg, 1979b). Therefore, although the data of assaults and batteries should be treated with caution, and although many other factors besides alcohol consumption affect the rate of violent crimes, the data on changes in the number of violent offences do not contradict our earlier hypothesis about changes in drinking habits.

ALCOHOL AND TRAFFIC

Drunken driving became a punishable offence in Finland in 1926, and statistics have been kept since 1930. However, it was not until 1969 that drunken driving records came to be more widely used as an indicator of alcohol problems. This implies that traffic accidents caused by the use of alcohol have only recently come to be regarded as a serious alcohol control policy problem.

The per adult rate of drunken driving cases has increased ten-fold during the past three decades (Figure 6). Although the increase was quite modest in the 1950s, the rate increased markedly from the early 1960s. The growth in the number of cases of drunken driving was particularly strong in the first half of the 1970s, after the 1968 alcohol legislation came into force.

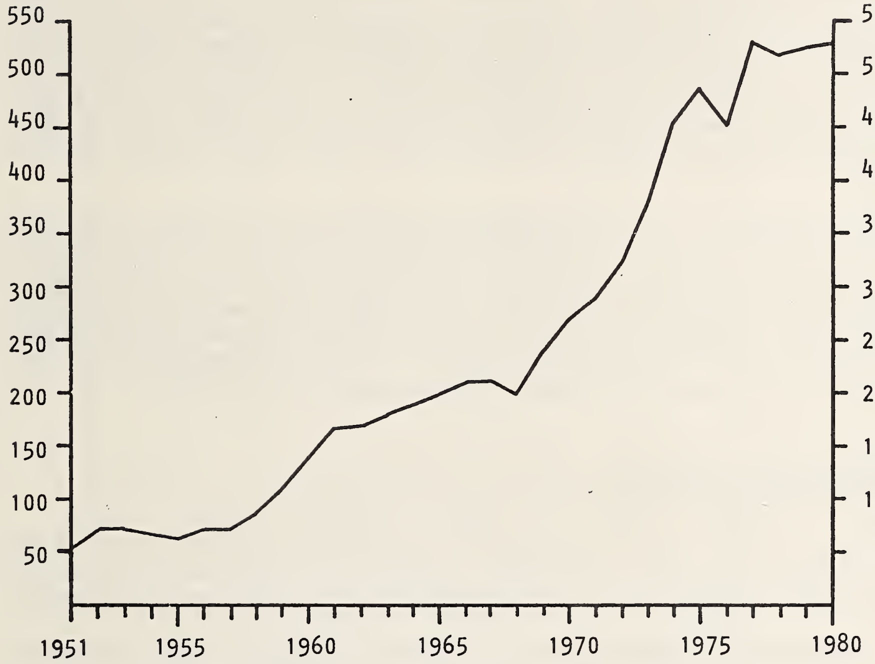
Changes in the number of cases of drunken driving recorded by the police may reflect: changes in the actual extent of drunken driving, or changes in the proportion of cases caught by the police, or both. The latter may be studied by examining the results obtained from blood tests performed on drivers suspected of drunken driving. The conclusion to be drawn from the Finnish experience is that the proportion of drunken drivers actually caught did not change substantially during the study period except between 1968 and 1974 (Jaakkola and Takala, 1971; Ahlström-Laakso and Österberg, 1977). The proportion caught between 1968 and 1974 would have declined which means that the incidence of drunken driving rose even more sharply over that particular period than the curve in Figure 6 would suggest.

Since legislation on drunken driving was altered in March 1977, it is difficult to evaluate changes in drunken driving in the late 1970s. Notwithstanding, the mean amount of alcohol found in the bloodstreams of drivers suspected of drunken driving was lower in the late 1970s than in the mid-1970s. Taken together with other information about police control, this can be interpreted as meaning that the likelihood of drunken drivers being caught rose during the late 1970s. A reasonable conclusion is that drunken driving increased far more slowly in the late 1970s than in the early 1970s -- if, indeed, there was any growth at all.

Changes in the amount of drunken driving is influenced by changes in the aggregate volume of alcohol consumed and drunking habits, and by changes in the volume of motor traffic. The growth in alcohol consumption has been shown in Figure 1; the volume of motor traffic also increased throughout the period under investigation. However, the relative increase in motor traffic was far greater in the 1950s than in the 1970s. The increase in both alcohol consumption and in motor traffic clearly explain the increase in drunken driving over the last three decades. The part played by drinking habits can also be assessed (cf. Österberg, 1979b; Ahlström and Österberg, 1982). The general improvement in drinking habits seem to be a factor which lessened the incidence in drunken driving -- particularly in the early 1960s.

FIGURE 6

CASES OF DRUNKEN DRIVING PER 100,000 INHABITANTS
AGED 15 YEARS AND OLDER, FINLAND, 1951-1980



Sources: Official Statistics of Finland XXIII A:89-117 Criminality known to the police 1951-1980; Central Statistical Office of Finland.

Another indicator of trends in alcohol-related problems in the traffic system entails the number of traffic accidents classified by the police as involving alcohol (Figure 7). The per capita rate of these accidents increased modestly in the 1950s, increased sharply in the 1960s and early 1970s, and decreased after 1973.

These fluctuations are somewhat surprising in view of our earlier observation that the number of cases of both drunken driving and public drunkenness increased more slowly in the 1960s than in the early 1970s. On the other hand, the data for cases involving alcohol as a proportion of all traffic accidents are in much closer aggreement with our previous observations (Figure 8). The share of cases involving alcohol decreased in the 1950s, rose slightly in the 1960s, increased markedly in the first half of the 1970s and then declined sharply.

The explanation for the contradictory picture given by Figures 7 and 8 lies in fluctuations in the total number of road traffic accidents. These increased quite rapidly in the 1950s and early 1960s, declined sharply in the late 1960s, and declined slightly in the first half of the 1970s. The overall decline in the number of road traffic accidents since the mid-1960s may be explained by the improved road network and other road safety measures. These factors have also retarded the growth in alcohol-related traffic accidents since the mid-1960s.

ALCOHOL POISONING AND CIRRHOSIS OF THE LIVER

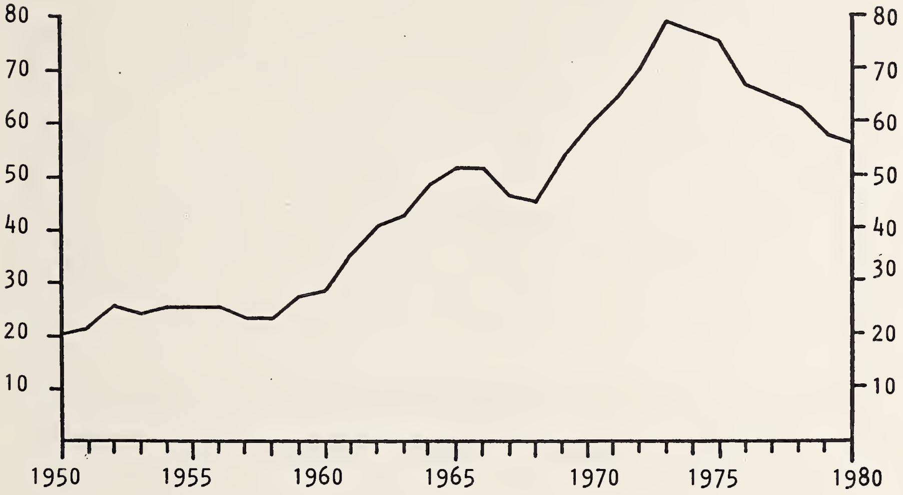
Deaths due to alcohol poisoning and alcoholism are directly linked to the use of alcohol. Since the early 1970s it has been more common to use alcohol poisoning and cirrhosis of the liver mortalities as indicators of alcohol problems.

Deaths from alcohol poisoning increased only slightly in the 1950s and in the first half of the 1960s (Figure 9). However, the rate increased very sharply between 1966 and 1968, remained quite stable until 1972, and since then has fluctuated from year to year. The rate of death from cirrhosis of the liver increased somewhat in the 1950s, remained relatively stable between 1960 and 1967, increased quite rapidly from 1968 to 1974, and declined in 1975 (Figure 9). Overall, the rate of death from cirrhosis of the liver increased substantially during the period under review.

Figure 10 shows that the number of deaths from liver cirrhosis has increased in relation to alcohol consumption in the 1950s but fell in the 1960s. The cirrhosis-consumption ratio remained stable after the mid-1970s. The ratio between alcohol poisoning fatalities and alcohol consumption presents far greater annual fluctuations than the cirrhosis-consumption ratio. As with the cirrhosis-consumption ratio, the alcohol poisoning-consumption ratio was smaller in the late 1970s than in the early 1950s. On the one hand, the great yearly changes in the alcohol poisoning-consumption ratio for the late 1960s and early 1970s reflect changes in statistical procedure; to some extent alcoholism substituted alcohol poisoning as a cause of death. On the other hand, these changes are linked with the appearance on the market of a new type of substitute alcohol and the way in which it was consumed and ultimately withdrawn from sale (Mäkelä, 1979).

FIGURE 7

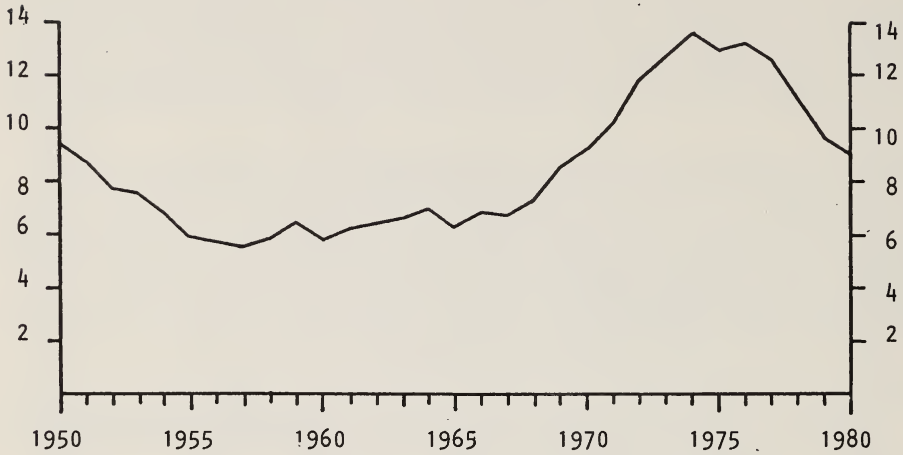
ROAD TRAFFIC ACCIDENTS CLASSIFIED AS INVOLVING ALCOHOL PER 100,000 INHABITANTS, FINLAND, 1950-1980



Sources: Statistical Year Book of Finland 1950-1980; Central Statistical Office of Finland.

FIGURE 8

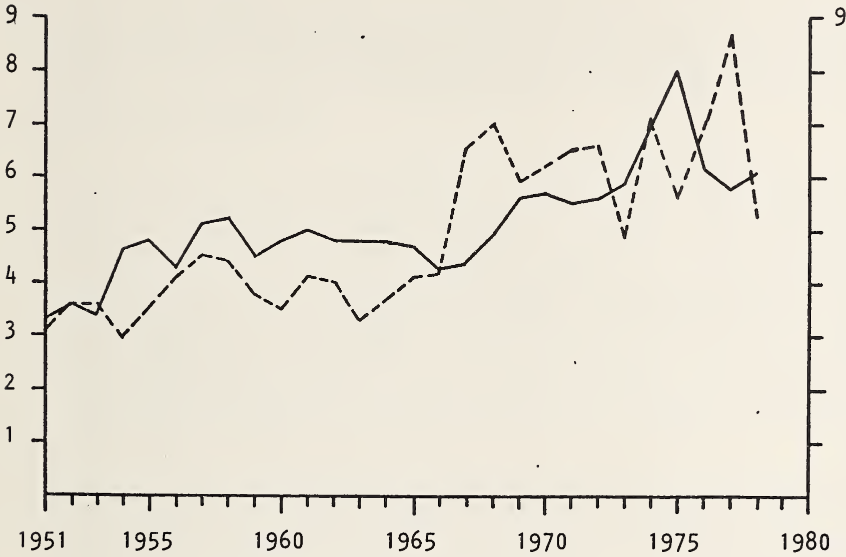
PERCENTAGES OF ALL TRAFFIC ACCIDENTS CLASSIFIED AS CASES INVOLVING ALCOHOL, FINLAND, 1950-1980



Sources: Statistical Year Book of Finland 1951-1980; Central Statistical Office of Finland.

FIGURE 9

DEATHS FROM ALCOHOL POISONING AND CIRRHOSIS OF THE LIVER PER 100,000 INHABITANTS AGED 15 YEARS AND OLDER, FINLAND, 1951-1978



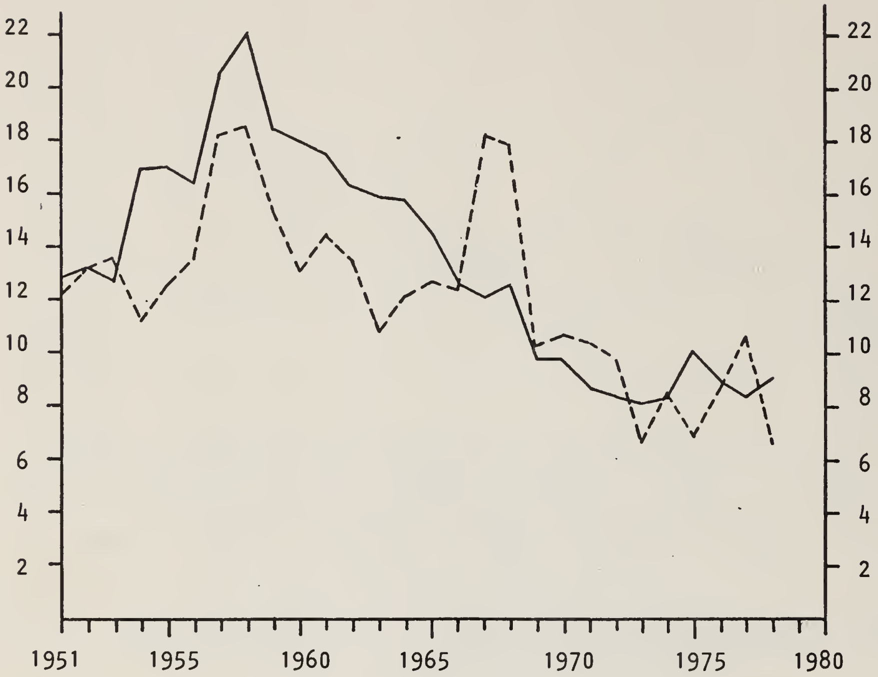
--- Deaths from alcohol poisoning

—— Deaths from cirrhosis of the liver

Sources: Official Statistics of Finland VI B:107-132 Death Causes 1951-1977; Central Statistical Office of Finland.

FIGURE 10

DEATHS FROM ALCOHOL POISONING AND CIRRHOSIS OF THE LIVER RELATIVE TO ALCOHOL CONSUMPTION; DEATHS PER MILLION LITRES OF 100% ALCOHOL, FINLAND, 1951-1978



- - -　Deaths from alcohol poisoning

———　Deaths from cirrhosis of the liver

Sources: Official Statistics of Finland VI B:107-132 Death Causes 1951-1977; Alko's Year Book 1951-1978; Central Statistical Office of Finland.

SUMMARY AND DISCUSSION

This paper represents an attempt to describe changes in the alcohol problems of one particular country with the aid of official statistics. The nature of the statistical series available has set limits to the examination of changes in alcohol problems. However, the following points emerge from this examination:

1. Alcohol problems have increased considerably during the last 30 years. They grew at a noticeably faster pace in the first half of the 1970s than in the 1950s and 1960s and the second half of the 1970s. Nevertheless, the growth of most alcohol problems was clearly much smaller than the growth of alcohol consumption.

2. Those alcohol problems which are linked to drunken behaviour decreased in the 1950s and remained stable during the 1960s despite an increase in alcohol consumption. This implies that drinking habits become more refined in the 1950s and 1960s. On the other hand, the harm wrought by drunkenness grew at more or less the same rate as the growth of alcohol consumption in the first half of the 1970s, implying that the refinement in drinking habits was interrupted by the increase in consumption. Since the mid-1970s, the consumption of alcoholic beverages has remained almost stable and consequences linked to drunken behaviour have declined a little. The implication is that drinking habits have tended to become more moderate of late.

3. Problems involving road traffic were apparently transformed into alcohol problems to an increasing extent in the 1960s and 1970s. The rise in alcohol consumption also increased alcohol's role in public health problems and brought public health aspects into alcohol control policy making.

4. The growth rate varies from one type of alcohol problem to another. Health problems which are related to prolonged heavy alcohol use show a steeper increase than alcohol problems which are related to drunken behaviour. Drunken behaviour still accounts for a large measure of Finland's violence and traffic accidents. Moreover, even from a public health perspective, drinking with the sole aim of becoming drunk is still a more serious problem than a regular and abundant use of alcohol not leading to intoxication.

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ALCOHOL PROBLEMS IN SWITZERLAND

by

Richard Müller*

INTRODUCTION

Not only consumption figures, but also representative population surveys verify that Switzerland is a highly permissive society as far as the consumption of alcohol is concerned: in an almost endless number of situations the drinking of alcohol is a socially tolerated and often encouraged form of behavior. It is obvious that this practice will have problematic consequences. However, what is perceived and judged to be problematic by a society is not at all coincidental, but rather a result of the universal as well as the particularistic interests of its members. While one can assume that to minimize costs and prevent accidents is in the general interest, a social problem is not simply an abstraction, since it refers to concrete "offenders." Thus the definition of alcohol problems also includes the power of a definition maker to characterize an "offender" and attach a label to him. The possibility of supporting particularistic interests by the designation "social problems" is therefore inherent in the process of constructing a definition.

In Switzerland there are no statistics about the phenomena "alcohol and the family" or "alcohol and partnership"; this may be interpreted as the consequence of certain particularistic interests, since alcohol legitimizes or at least explains aggressive, violent and unpredictable behavior of a man towards weaker members of the family (Room, 1980). Furthermore, social norms prohibit the availability of alcoholic beverages to the less powerful so that they cannot legitimize their aggression by the consumption of alcohol.

Different definitions of a problem can be the result of different cultural values, as is illustrated by the phenomena of "public drunkenness": in anglo-saxon and northern European countries "public drunkenness" is a frequently reported form of deviant behavior, whereas in middle and southern European countries, including Switzerland, this offense does not exist as an official category of deviant behavior.

MORTALITY

Cirrhosis of the Liver with Alcoholism

In Switzerland the average alcoholic beverage consumption is strongly correlated with liver cirrhosis mortality. The statistical relationship between average consumption of various alcoholic beverages and the rate of mortality of liver cirrhosis with alcoholism (1950-1978) produces the correlation coefficients depicted in Table 1.

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TABLE 1

CORRELATIONS (PRODUCT-MOMENT) BETWEEN THE RAW MORTALITY RATE OF LIVER CIRRHOSIS WITH ALCOHOLISM (PER 100,000 POPULATION 20 YEARS AND OLDER) AND PER CAPITA CONSUMPTION (15 YEARS AND OLDER) OF VARIOUS ALCOHOLIC BEVERAGES, SWITZERLAND, 1950-1978

	Total Mortality	Mortality Male	Mortality Female
Wine consumption	.56	.39	.77
Distilled spirits consumption	.75	.61	.70
Beer consumption	.81	.74	.45
Total alcohol consumption	.71	.59	.65

Very different coefficients are expressed according to the individual types of beverages. Beer consumption shows the strongest and wine the statistically weakest relationship to the total liver cirrhosis mortality. However, when the coefficients are examined separately according to sex, wine consumption has the highest correlation with the liver cirrhosis rate for females.

The differences in the coefficients are probably not due to sex-specific variations in liver toxicity of wine and beer, but rather to the preference for beer by Swiss males, including excessive drinkers, presumably because of its low price. Wine is preferred by women to a greater extent, which is reflected by the corresponding coefficients. Nevertheless, correlation coefficients are only of limited use, namely to show the covariation between quantities, and the linear-causal interpretation of correlations between time series can lead to unwarranted conclusions.

In Switzerland liver cirrhosis mortality increased from 1950 to the beginning of the 1970s by approximately 50%, but in the last half of the 1970s returned to level of the late 1950s (Figure 1). The trend of alcohol-induced liver cirrhosis mortality also reflects the relative importance of this cause of death when it is compared to the total figure of all deaths. Whereas at the beginning of the 1950s less than 1% of all deaths could be traced to alcohol-induced liver cirrhosis, in 1970-71 it was more than 1.4% and in 1977-78 roughly 1.3%. Compared to the death rate for all causes of death, liver cirrhosis mortality linked to alcohol has gained importance. This is particularly the case for women, where the corresponding proportion during the period of investigation nearly doubled (1950: 3.6%, 1979: 6.2%). In the male population the proportion of liver cirrhosis deaths became more stable in the 1970s averaging 20% of the total number of deaths.

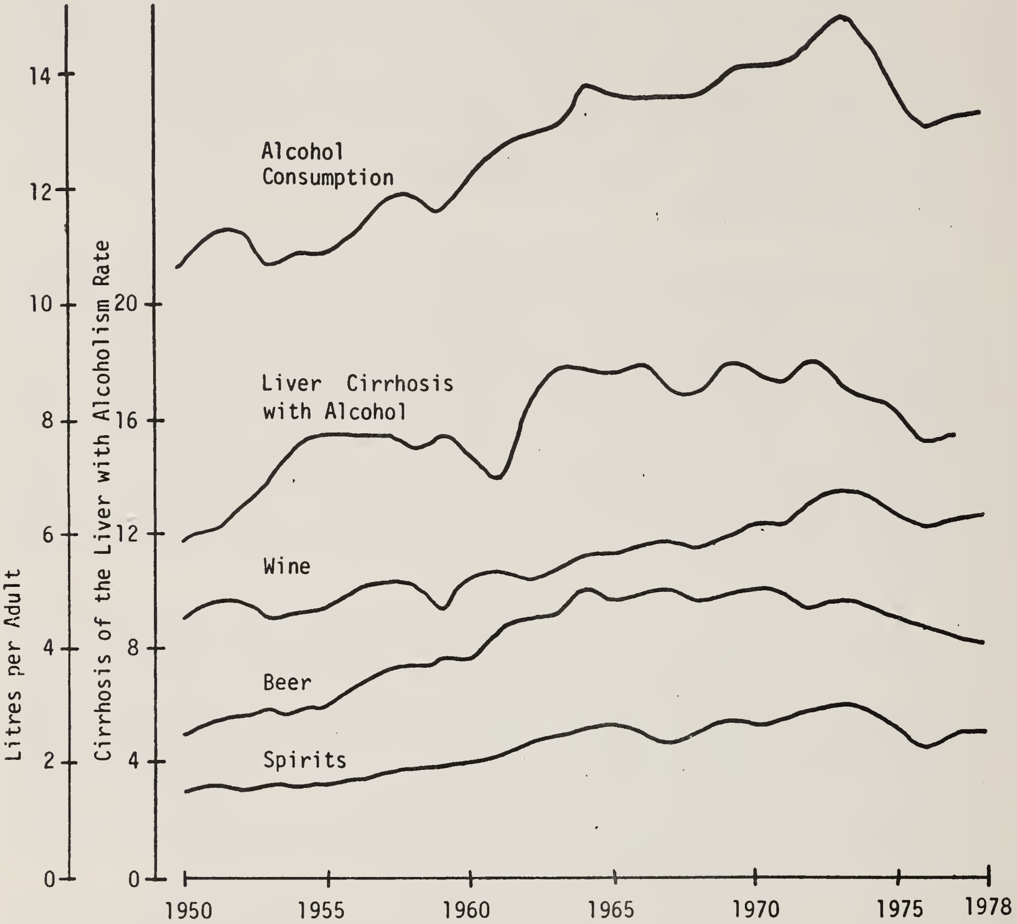
Alcohol is above all a "male drug" in Switzerland as is reflected in the comparison of male and female liver cirrhosis mortality rates (Figure 2). Up until the mid-1960s, the female liver cirrhosis mortality rate remained surprisingly constant, whereas that for men increased by more than 50%. Accordingly, the male to female rates changed from 4:1 to 7:1. In the last half of the 1960s there was a peak in the female rate, whereas the male rate levelled off and then declined in the mid-1970s, analogous to the rate of alcohol consumption. Due to the larger proportion of total alcohol consumed by males, it appears that the decrease in alcoholic beverage consumption in the seventies can be traced principally to the reduction by men and not by women.

The relationship of the male and female liver cirrhosis rate also has its parallel in the consumption data. A survey about the drinking habits of the Swiss population carried out in Switzerland in 1975 indicated a ratio of quantities consumed by men and women ranging from 4:1 to 7:1 according to age group (Müller, 1978).

The latent period leading up to a lethal liver cirrhosis is reflected in the age-specific mortality. The mortality due to this organic disorder is related to a large extent to individuals over 60: with increasing average consumption of alcoholic beverages between 1950 and 1970 a larger proportion of those over 60 died of an alcohol related liver cirrhosis. Furthermore, autopsies performed in Zürich hospitals have shown that the incidence of liver carcinomas among men 60-80 years of age has doubled, whereas the development of 75% of all liver carinomas was based on cirrhotic livers (Bösch, 1979).

FIGURE 1

RATE OF ALCOHOL CONSUMPTION* AND LIVER CIRRHOSIS WITH ALCOHOLISM**, SWITZERLAND, 1950-1978



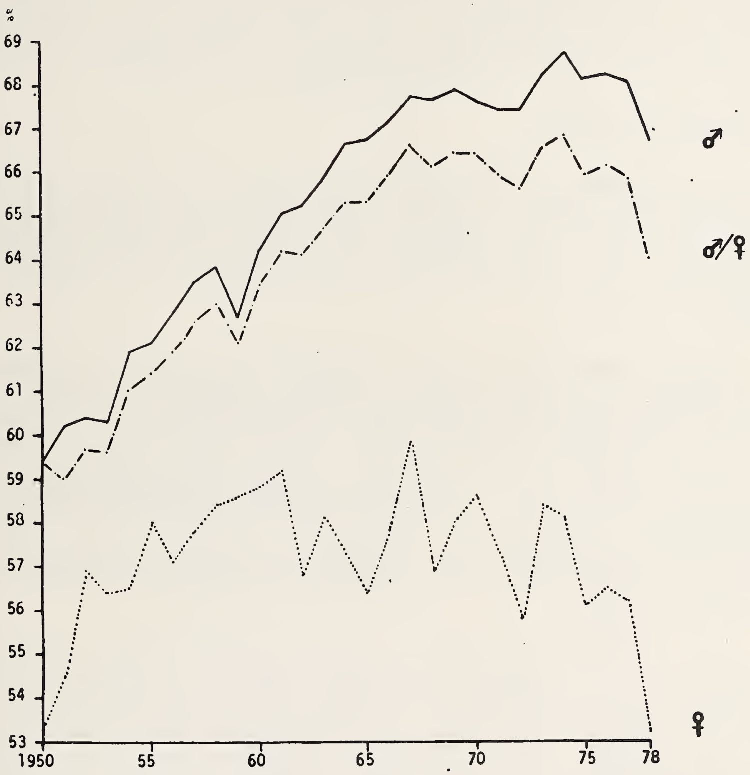
* Consumption rate per person aged 15 and older in litres of pure alcohol 100%.

** Rate of liver cirrhosis with alcoholism over 2-years-centered averaged means.

Sources: Federal Office of Statistics, Bern
Federal Alcohol Administration, Bern
Swiss Annual Statistics Books, Corresponding Years.

FIGURE 2

PROPORTION OF PERSONS AGED 60 AND OVER OF TOTAL CIRRHOSIS MORTALITY WITH ALCOHOLISM, BY SEX, SWITZERLAND, 1950-1978



* Moving average over 5-year period.

Sources: Federal Office of Statistics, Bern. Raw data Statistical Yearbook.

If liver cirrhosis mortality is considered specifically according to age and sex, an interesting finding emerges from the temporal data (Müller 1982). The trend of the raw mortality rate - namely an increase until the mid-sixties, with stabilization thereafter and finally a decrease - is established only on the basis of the mortality in the older age groups, but not in the younger ones. However, this holds true only for men. If alcohol induced liver cirrhosis mortality is taken as an indicator of excessive drinking, then these findings suggest that heavy drinking has only increased among younger women and has remained fairly constant among older women. In addition, it seems that the female drinking patterns have not been as strongly affected by the economic recession at the beginning of the seventies as was the case among males. It appears that the decrease in alcohol consumption due to the recession has occurred especially among older men, but not among younger men. The age-specific mortality also indicates a gradual decline in the starting age for drinking.

Acute Alcohol Poisoning

Acute alcohol poisoning is the only cause of death which is directly linked to the intake of alcohol. Similarly, the diagnosis of *acute* alcohol poisoning is relatively clear. Mortality rates due to this cause are therefore especially suited to the intercultural comparison of alcohol problems. To what extent this cause of death has to do with an accident or a suicide remains, however, and open question.

Cases of death due to acute alcohol intoxication (E 860, ICD) are very rare in Switzerland - in contrast to the northern and eastern European countries. Under these circumstances the various functions attributed to alcohol become clear as reflected in different cultures. In Switzerland, alcohol is seldomly used to achieve a condition of heavy intoxication; the consumption of alcoholic beverages has much more the function of situation markers which structure everyday life. Whereas in northern and eastern Europe the excessive consumption of alcohol is primarily regarded as a problem of public order, in Switzerland - as in France - the emphasis of the problem definition falls in the area of public health.

The mortality rates due to acute alcohol poisoning fluctuate totally independent of the average consumption level in Switzerland (1950-1978). Similarly, there is no correlation with the suicide mortality level, an indication that deaths due to acute alcohol poisoning are more likely related to accidents than to suicides. The distribution of age for cases of death remains approximately the same: acute alcohol intoxication is not a principal cause of death for the young, but rather for the middle-aged (Table 2). A comparison of male to female mortality due to alcohol poisoning indicates that it is significantly higher among males, corresponding to the sex-specific patterns of drinking. But because of the low number of cases it is impossible to establish any clear trends.

In a Finnish study of autopsies performed on victims of lethal alcohol poisonings, a high prevalence of fatty livers was discovered (Poikolainen, 1975). From these findings the author concluded that most of the lethal alcohol poisonings occurred to chronic excessive consumers of alcohol. Therefore lethal alcohol poisonings can be seen as not simply the result of an acute overdose, but much more the result of an acute *and* chronic excessive consumption of alcohol.

TABLE 2

CASES OF DEATH DUE TO ALCOHOL POISONING PER AGE GROUP, SWITZERLAND, 1951-1978

Period	Under 20 years	20-59 years	60 years+	Total cases
1951-55	3	22	9	34
1956-60	1	20	10	33
1961-65	3	30	9	42
1966-70	0	23	7	30
1971-75	0	27	6	33
1976				6
1977				13
1978				10

Source: Federal Statistics Office.

But in light of the extremely different drinking patterns in Finland and Switzerland, the transferability of these findings to the Swiss experience is questionable.

Mortality Due to Alcohol Psychoses and Alcoholism

Up until the beginning of the 1970s, 1.5 to 2.5% of all deaths in Switzerland could be traced back to alcohol psychoses. However, this proportion has been decreasing since the mid-1960s largely as a result of improved treatment of delirium with medication. Alcohol psychoses are a highly sex-specific cause of death, as the male mortality is 10 to 30 times the rate for females (Figure 3).

Although in the case of alcohol psychoses the symptoms that characterize the syndrome are more of less well defined, this is hardly the case for the category of "alcoholism." Changes in the practice of assigning the main cause of death occur unsystematically. Thus, the large fluctuations in the raw alcoholism-mortality rate are in part due to changes among doctors as to their disposition to assign alcoholism as the primary or secondary cause of death on death certificates. According to official statistics, a total of 8 persons died because of alcoholism in 1977, but in 1978, the number was 110. This discrepancy can hardly be explained other than by an increased consciousness of the problem, which can also be discerned in a greater number of scientific studies published in medical periodicals.

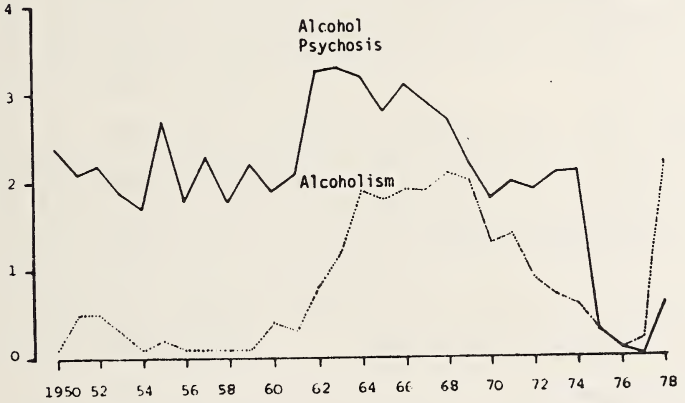
The age-specific data on alcohol-psychoses mortality indicates that up until the end of the 1960s an increasing number of older individuals died of this disorder; but during the 1970s there was an increase among the younger-aged group. The same trend can also be seen in the case of alcoholism mortality among men. Among women, the number of cases is too few to make corresponding statements. This trend of a decreasing followed by an increasing proportion of persons aged 60+ of the total number of deaths due to alcoholism and alcohol psychoses corresponds with the temporal patterns observed in liver cirrhosis mortality. These parallel trends can be interpreted as indicative of an age-specific change in drinking habits.

Other Causes of Death

The excessive consumption of alcohol is not only connected with causes of death discussed above. As has been shown in a number of epidemiological studies, heavy alcohol drinkers also have "excessive" mortality due to accidents, suicide, tuberculosis, pneumonia as well as cardio- and cerebrovascular disorders (e.g., Bruun *et al.*, 1975). In particular the relationship between alcohol consumption and cancer of the mouth, the larnyx and the esophagus has been well verified. The positive relationship between the level of alcohol consumption in each canton and mortality due to cancer of the esophagus and larnyx among males is indicated in Table 3. On the other hand there is only a small negative correlation between alcohol consumption and the rate of mortality due to ischemic heart disease. There is, however, a clear negative relationship between alcohol consumption and mortality due to brain vessel disorders.

FIGURE 3

MORTALITY DUE TO ALCOHOLISM AND ALCOHOL PSYCHOSES PER 100,000 POPULATION, 20 YEARS AND OLDER, SWITZERLAND, 1950-1978



Source: Federal Office of Statistics, Bern; Federal Alcohol Administration, Bern and Swiss Annual Statistics books, Corresponding years.

TABLE 3

CORRELATION (PRODUCT-MOMENT) BETWEEN ALCOHOL CONSUMPTION IN EACH CANTON* AND SELECTED CAUSES OF DEATH, 1978

	Men	Women
Liver cirrhosis	.720	.288
Tuberculosis	.090	-.006
Malignant neoplasms (on the whole)	.098	-.074
- of mouth and throat	.144	.202
- of the esophagus	.406	-.006
- of the larynx	.422	.117
- of the stomach	.076	-.009
- of the intestines (exept rectum)	-.053	-.143
- of the rectum	.192	-.077
- of the trachea, bronchial tubes, lungs	.160	.142
- of the prostate gland	-.138	----
- of the breast	----	-.123
Ischemic heart disease	-.104	-.111
Brain vessel disorders	-.368	-.230
Diabetes	-.186	-.159
Traffic accidents	.234	.270
Violent death	.064	.126
Suicide	.038	.072

* Percentage of 20 year old men consuming over 50g of pure alcohol daily, according to Battegay *et al.*, 1977.

MORBIDITY

Estimated Prevalence of Alcoholism

Various methods exist to estimate the prevalence of alcoholism in a society. The three most common methods are the estimation based on liver cirrhosis mortality (Jellinek), the suicide-mortality, as well as figures on consumption (Ledermann). The following discussion will be based on estimations for Switzerland arrived at by the Jellinek formula.

Although the following data on the prevalence of alcoholism must be interpreted with care, Dudle has shown that in the case of Switzerland, Jellinek's formula has proved to be quite a valid indicator for the prevalence of alcoholism (Dudle 1976). Single has also demonstrated that estimations on the prevalence of alcoholism based on figures on consumption lead to results similar to those based on liver cirrhosis mortality (Single, 1979).

During the time period between 1950 and 1970 the prevalence of alcoholism doubled from 80,000 to about 160,000 alcoholics. The rate increased from 2,500 to 3,700 per 100,000 population aged 20 and older (Figure 4). Concurrent with a decline in average consumption in 1975 the rate dropped to 3,300 based on an estimated prevalence of 146,000. However, by 1978 there was an increase up to an estimated 3,500 alcoholics per 100,000 adults. A weakening of the trend appears to be manifested in connection with particularly high percentage increases. Whether this is due to statistical artifacts or real fluctuation cannot be determined.

The prevalence of alcoholism according to sex presents a different kind of dynamic, analogous to liver cirrhosis mortality. Between 1950 and 1978 the absolute prevalence for both sexes roughly doubled -- 67,000 male alcoholics to 17,000 female alcoholics in 1959, with increases to 122,000 for men and to 36,000 for women by 1978. However, at the beginning of the 1950s the ratio of the male to the female prevalence quota is 4.5:1, while at the beginning of the 1960s it was 7:1, and at the end of the 1970s it declines to under 4:1. As indicated in Figure 4, the estimated rate of alcoholism (Jellinek formula) among males climbed to a plateau between the early-1960s and early-1970s, whereas the rate among females changed very little.

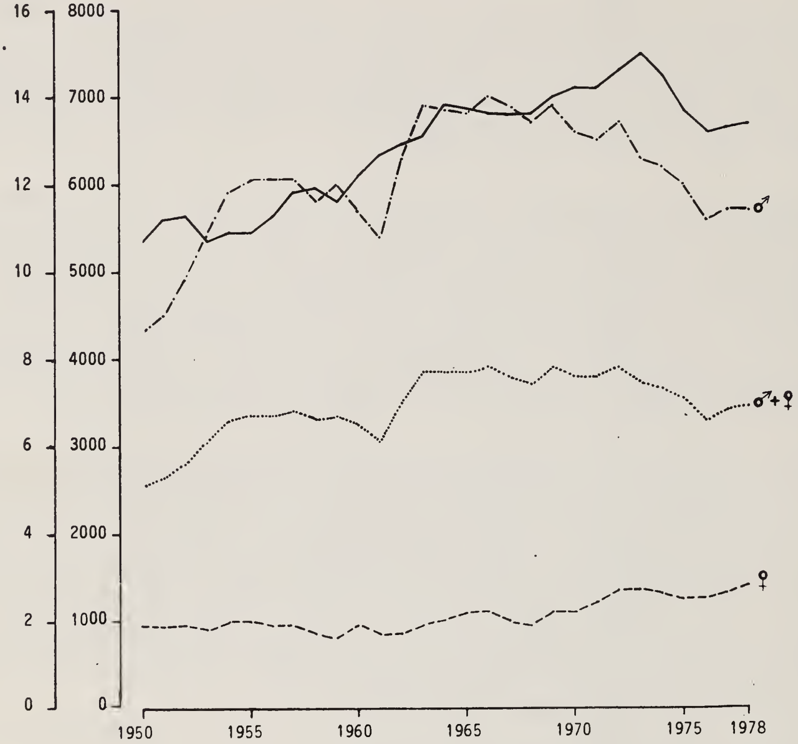
The Diagnoses Statistics in Medical Hospitals

The analysis of the most frequent diagnoses in medical and pediatric wards of medical hospitals for 1978 shows that for 15-19 year old male adolescents the "acute alcohol intoxication" ranks first for the 50 most common main diagnoses. If "toxic alcohol effects," "alcohol psychoses" and "alcoholism" are considered together, the following proportions are evident by age group: 9% of the main diagnoses for males aged 15-19, 5% for males aged 20-29, and 7% for men in the 30-39 age range. For the latter, alcoholism is the most prevalent diagnosis, comprising more than 4% of all main diagnoses.

Alcoholism is ranked second among the 50 most common diagnoses for males aged 40-49, whereas cirrhosis of the liver ranks eighth. In this age group, appproximately 7% of the main diagnoses are directly related to alcohol. For males aged 50-64 alcohol-related diagnoses are of considerable importance,

FIGURE 4

ESTIMATED PREVALENCE OF ALCOHOLISM (ACCORDING TO JELLINEK) PER 100,000 POPULATION, AGED 20 AND OLDER, AND ALCOHOL CONSUMPTION, SWITZERLAND, 1950-1978



Sources: Federal Office of Statistics, Bern, Federal Alcohol Administration, Bern, Swiss Annual Statistic Book. Raw data.

although it is above all cardio-vascular diseases and neoplasm that gain in relative importance in the diagnoses statistics. The relative importance of alcohol-induced main diagnoses decreases noticeably for those over 65, however, it should be emphasized that this study only deals with medical hospitals, thus, psychiatric and other special clinics are not taken into account.

The frequency of diagnoses of alcohol-induced illnesses is, as expected, lower for the female population. Although, for liver cirrhosis mortality rates, a male to female ratio of 4:1 to 6:1 is evident, the average ratio for liver cirrhosis morbidity is only 3:1. Obviously women are better remittents. However, this is only the case with respect to alcohol consumption, for if the frequency of main diagnoses of drug-damage or abuse is compared, then the frequencies are significantly higher for women (Figure 5).

Thus, there exists a kind of substitutive relationship betweeen the sexes with regards to the preferred drug: in all age groups of men where alcohol-induced illnesses predominate, in the corresponding age group of women drug damages rank highest in frequency of diagnoses. An approximate equilibrium can be established with regard to these patterns. Obviously for both sexes, the societal pressure to adapt to the environment intra- and not extra-personally is the same, yet the concrete forms by means of which this adaption is achieved differs according to the cultural norms. Alcohol is made less available to women due to social norms and they use medications without fear of discrimination; that is, medications are a functional alternative to alcohol.

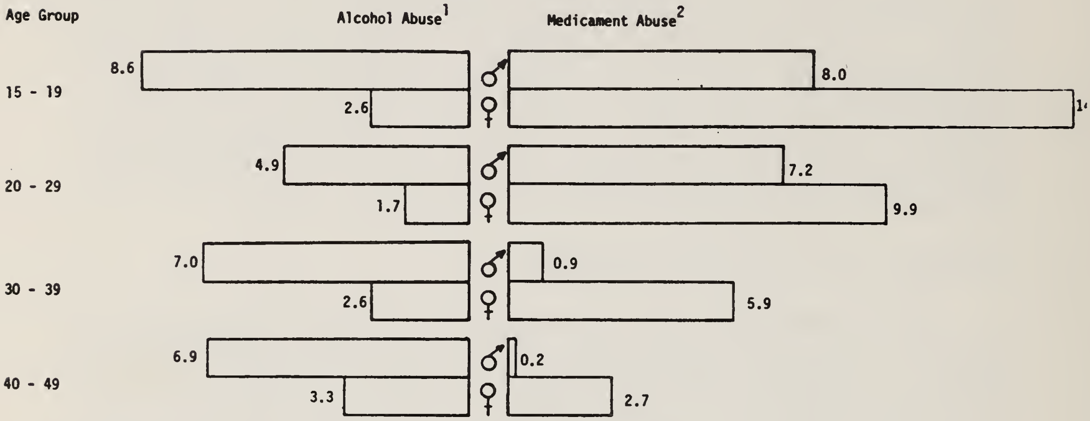
Admission Rates to Psychiatric Hospitals

The first-admission rates into psychiatric clinics due to alcoholism or alcohol psychoses has been remarkably constant for the time interval 1950-1970 (Table 4). It does not reflect the increase in average consumption of alcoholic beverages for this period. However, if male and female first-admission rates are regarded separately, then a definite increase in the rates can be seen for women, whereas the rates for men during the same time period decreased. At the beginning of the fifties, the relationship of the two rates was 9:1 and accordingly reduced to 4:1. Nevertheless, it would be inappropriate to conclude from these trends that alcohol problems have increased among women or decreased among men, since changes in the ratios can also be traced back to developments in the perception of social problems. Thus, it should be noted that in the case of liver cirrhosis mortality, the female rate remained constant for the same time period, whereas it increased for males. It is also possible that among women alcohol problems are more likely to be manifested on the mental level whereas among men somatic difficulties may be more common. Some studies indicate the degree of neuroticism for female excessive alcohol consumers is higher than that for male alcoholics.

The portion of first-admissions into psychiatric hospitals due to alcohol problems, viewed within the remaining diagnoses groups, shows a retrogressive tendency. Yet in 1970, alcoholism was clearly the most frequent diagnosis for men aged 40-49 and the second most frequent for those aged 30-39. A similar trend for alcoholism is not evident among female first admissions (Figures 6 and 7).

FIGURE 5

ALCOHOL AND MEDICATION (DRUG) ABUSE AS A MAIN DIAGNOSIS, BY AGE AND SEX, BASED ON ALL DIAGNOSES IN MEDICAL WARDS OF MEDICAL HOSPITALS, SWITZERLAND, 1978



1) IDC: 291, 303, 571, 980

2) IDC: 977, 967, 965, 970, 304, 978, 963

only considered if among th 50 most frequent diagnosis

Source: Calculated according to VESKA, Medical Statistics 1978.

TABLE 4

NUMBER AND RATE OF FIRST ADMISSIONS TO PSYCHIATRIC HOSPITALS FOR ALCOHOLISM AND ALCOHOL PSYCHOSES (PER 100,000 TOTAL POPULATION), SWITZERLAND, 1950-1970*

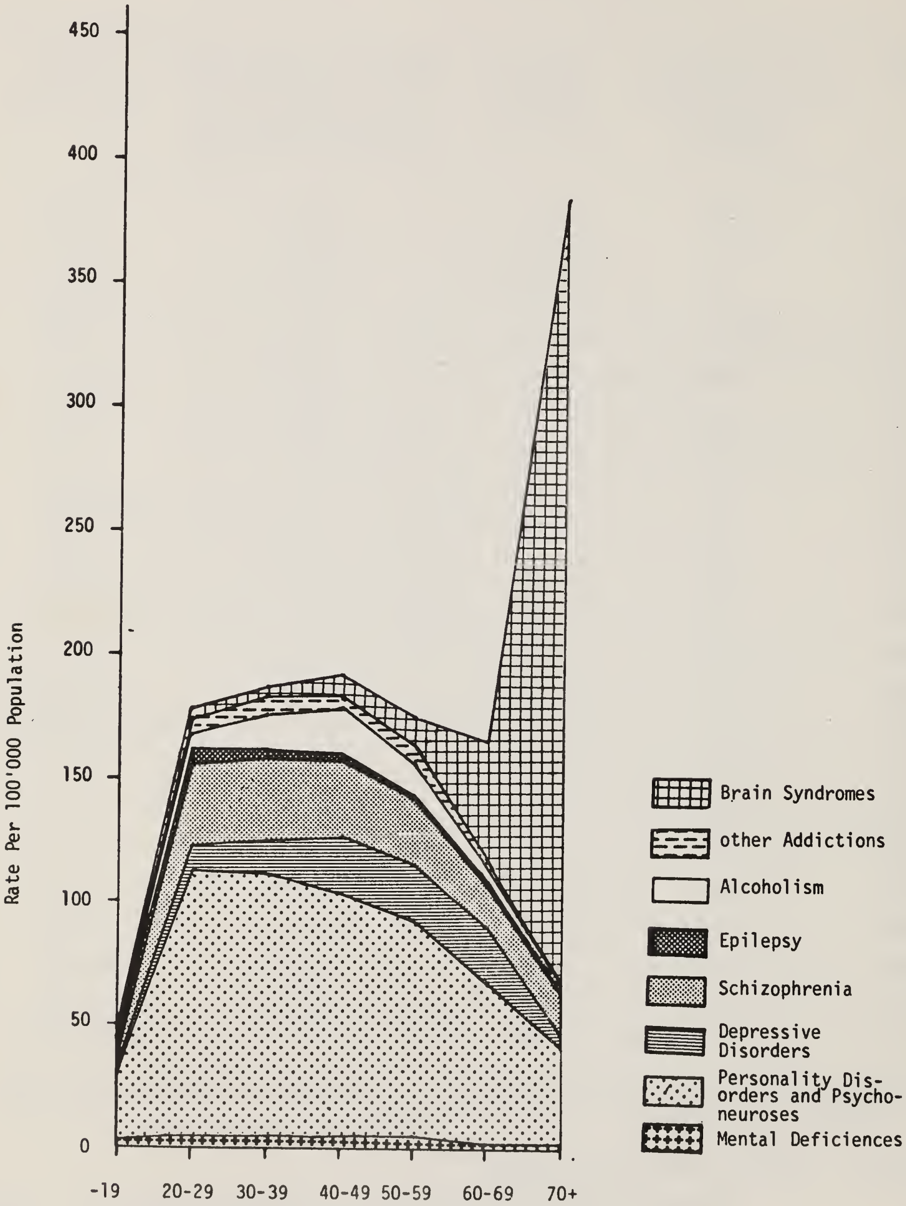
Year	First admissions due to alcoholism or alcohol psychoses	Rate per 100,000 population	Rate of first admissions due to alcoholism or alcohol psychoses per 1,000 total admissions	Total admissions
1950	1,044	22.14	152.6	6,840
1951	1,035	21.65	146.6	7,058
1952	931	19.20	129.6	7,186
1953	1,068	21.78	143.4	7,447
1954	983	19.86	125.4	7,840
1955	1,042	20.82	130.8	7,966
1956	890	17.54	106.7	8,344
1957	908	17.60	106.9	8,490
1958	897	17.22	107.1	8,379
1959	948	17.99	110.7	8,564
1960	938	17.28	103.5	9,061
1961	1,065	19.16	115.1	9,251
1962	1,159	20.67	122.3	9,474
1963	1,255	21.95	135.5	9,263
1964	1,246	21.39	131.5	9,475
1965	1,250	21.26	142.9	8,745
1966	1,072	18.01	134.6	7,964
1967	1,282	21.24	137.7	9,310
1968	1,254	20.51	134.8	9,305
1969	1,254	20.28	125.4	10,001
1970	1,288	20.54	124.3	10,365

* Statistics referring to first admissions to psychiatric hospitals have been abolished since 1970.

Source: The Swiss Statistical Yearbook.

FIGURE 6

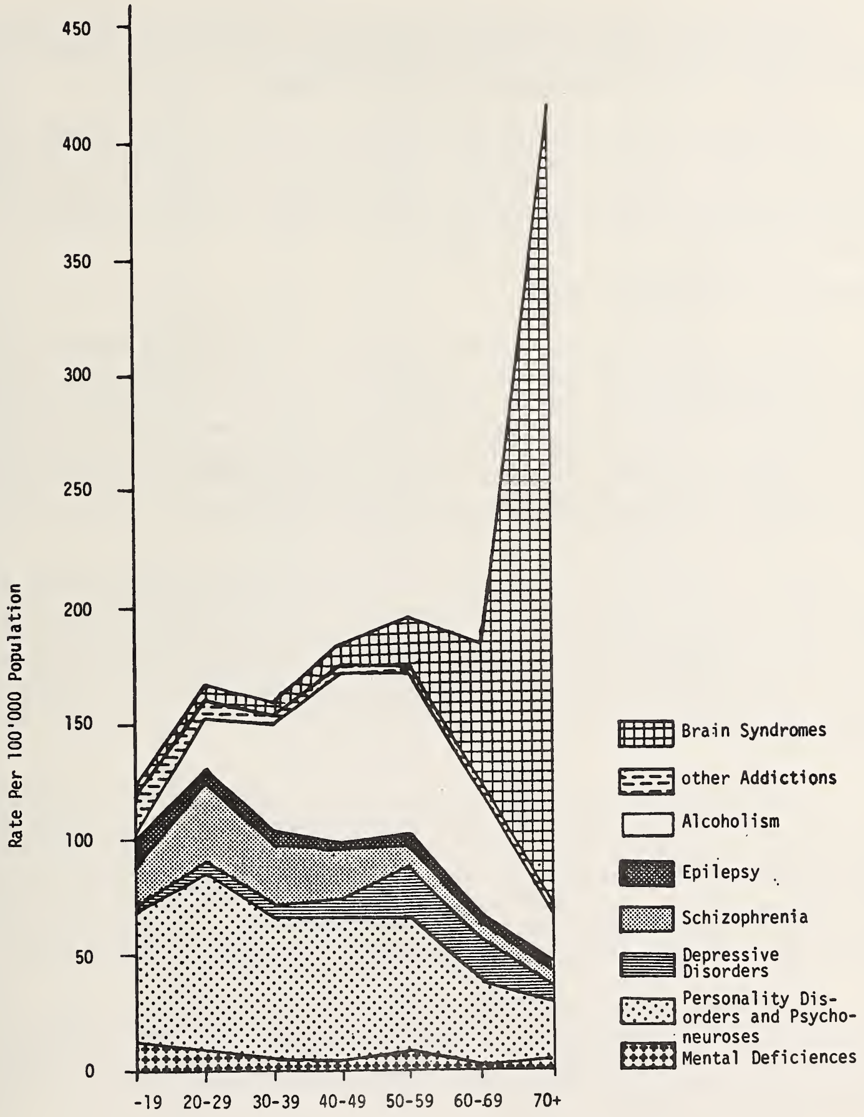
FIRST ADMISSIONS OF *MALES* TO INPATIENT PSYCHIATRIC HOSPITALS PER 100,000 POPULATION ACCORDING TO AGE AND MENTAL DISORDER, SWITZERLAND, 1970



Source: The Swiss Statistical Yearbook, 1970 (Raw data).

FIGURE 7

FIRST ADMISSIONS OF *FEMALES* TO INPATIENT PSYCHIATRIC HOSPITALS PER 100,000 POPULATION ACCORDING TO AGE AND MENTAL DISORDER, SWITZERLAND, 1970



Source: The Swiss Statistical Yearbook, 1970 (Raw data).

Between 1950 and 1970 the rate of *discharges* increased in relation to admissions for persons diagnosed as alcoholic in psychiatric hospitals. This reflects a tendency to keep patients for a shorter length of time in these hospitals. "Alcoholism" and "alcohol psychoses" as well as other diagnostic groups, are involved in this practice which is partially influenced by the introduction of new medications but also indicative of the increase in "revolving-door" psychiatry.

Interpretations based on data from psychiatric hospitals for recent years is complicated in that the only statistics on discharges are accumulated after 1973 and the criteria for including hospitals have also changed.

Discharges have remained stable during the 1970s, as is also the case for "alcoholism" and "alcohol psychoses" discharges as a proportion of total discharges. The relationship of sex-specific rates for discharges has decreased by nearly 100% which is principally due to the increase in female discharges. An analogous pattern is evident for admissions.

Alcoholism Treatment Facilities

There are approximately 500 beds available in institutions designed for the inpatient treatment of alcoholism in Switzerland. The bed space had been expanded, particularly for female clientele, at the end of the 1960s and the beginning of the 1970s. These changes are in line with research which has shown that the supply of therapy space itself influences the demand for it. Roemer's classic study indicates "that out of 16 factors which appear to be significant for the frequency of hospitalization and the length of stay, none has a greater influence than the bed supply" (Roemer and Skain, 1959).

Between 1950 and 1970, the trend in the first admission rates of inpatient alcoholism treatment facilities is similar to that of the psychiatric hospitals: a substantial decrease in first admissions for men and a slight increase for women. During the years 1971 to 1978, however, there was a substantial increase in both rates. The increase for women is particularly clear and the ratio of male and female rates changed accordingly: whereas in 1950 it was 10:1, it dropped to 4:1 by 1978 (Table 5).

A comparison of the admission rate with per capita alcohol consumption for the corresponding time period indicates that, in spite of increasing consumption during the years 1950 to 1973, the first admissions decreased. Furthermore, while the per capita consumption decreased from 1974 to 1977, there was an increase in the first admission rate. It appears that the demand for treatment services was induced by an increased supply of available space, mentioned above, and not directly influenced by the average consumption level.

During the course of the observation period, a declining age among first admissions is evident among the clientele. On the one hand this points to a change in habits of consumption; on the other hand, it also points to a change in the process of selection, in that special clinics select younger cases, considered to have a better prognosis.

The change in age structure of the clientele is also reflected in the marital status of the new admissions: the proportions of singles increased during the years from 1950 to 1976, whereas the proportion of married men decreased. It is

TABLE 5

NUMBER AND RATE OF FIRST ADMISSIONS TO INPATIENT ALCOHOLISM TREATMENT FACILITIES, BY SEX, RATIO OF MALE TO FEMALE RATES (PER 100,000 POPULATION), SWITZERLAND, 1950-1978

	Number			Rate			Ratio of Rates
Year	Male	Female	Total	Male	Female	Total	M:F
1950	355	35	390	15.63	1.43	8.27	10.9:1
1951	361	45	406	15.66	1.82	8.49	8.6:1
1952	327	36	363	13.97	1.43	7.48	9.8:1
1953	378	26	404	15.96	1.03	8.24	15.5:1
1954	336	34	370	14.05	1.33	7.47	10.6:1
1955	383	49	432	15.83	1.90	8.63	8.3:1
1956	364	47	411	14.83	1.79	8.10	8.3:1
1957	373	29	402	14.93	1.09	7.79	13.7:1
1958	417	36	453	16.53	1.34	8.69	12.3:1
1959	420	34	454	16.45	1.25	8.61	13.2:1
1960	347	50	397	13.03	1.81	7.31	7.2:1
1961	420	46	466	15.35	1.63	8.38	9.4:1
1962	431	59	490	15.58	2.08	8.74	7.5:1
1963	376	55	431	13.38	1.89	7.54	7.1:1
1964	349	53	402	12.17	1.79	6.90	6.8:1
1965	369	59	428	12.88	1.96	7.28	6.6:1
1966	356	48	404	12.28	1.57	6.79	7.8:1
1967	345	72	417	11.75	2.32	6.91	5.1:1
1968	338	54	392	11.30	1.73	6.41	6.5:1
1969	319	53	372	10.54	1.68	6.02	6.3:1
1970	286	54	340	9.26	1.70	5.42	5.5:1
1971	302	66	368	9.88	2.06	5.89	4.8:1
1972	305	71	376	9.89	2.20	5.96	4.5:1
1973	367	59	426	11.83	1.82	6.71	6.5:1
1974	429	81	510	13.79	2.48	8.00	5.6:1
1975	393	83	476	12.73	2.56	7.52	5.0:1
1976	450	89	539	14.67	2.76	8.56	5.3:1
1977	499	147	646	16.28	4.56	10.27	3.6:1
1978	478	123	601	15.59	3.81	9.54	4.1:1

Source: Statistik der Fürsorgestellen und Heilstätten für Alkoholkranke
The Swiss Statistical Yearbook (raw data).

of interest that the proportion of divorced and widowed cases is greater among female than male clientele. The following explanation is offered for the latter finding.

A destruction of the familial interaction circles may affect the woman more often and to a greater degree than the man. In addition, as far as divorce is concerned, women may be more likely to interpret it as a personal failure than do men. These may be predisposing factors to excessive alcohol consumption.

Changes in the referral agents of clientele to special clinics provide an important indication of how the concept "alcoholism" has changed in Swiss society in the past decade. Whereas in 1970 the state authorities were still the most common referral agents for men as well as women, in 1978 medical institutions were the main referral agents for women and welfare institutions have gained importence for men in recent years. Self-referral has also increased for both sexes. Contacting a specialized alcohol clinic via self-referral may indicate a diminished perception of culpability, which in turn is an important dimension of "medicalization" of alcoholism. Nevertheless, a self-referral does not preclude the existence of strong social pressures to enter treatment for alcoholism.

Out-patient Treatment Centers for Alcoholics

In Switzerland the main source of treatment for alcoholism is found in the out-patient treatment center. At the beginning of the century, this ambulatory social service included the informal activities of members of the various prohibition societies or charity organizations set up on a cantonal level. Even today a substantial proportion of the social services are private institutions, although the expansion of therapeutic services since the fifties has mainly taken place in cantonal, inter-community and community welfare services. About 90% of these services are specialized in the treatment or care of alcoholics, whereas the remaining 10% is concerned with the more newly established social-medical and social-psychiatric services, which treat alcoholism as well as other problems.

The rate of female first admissions to the ambulatory centres for the care of alcoholics has increased, analogous to a trend evident among female admissions to in-patient facilities. Between 1959 to 1978 an increase of approximately 100% is evident (Table 6). In contrast, the rate of male first admissions has declined. Accordingly, there has been a change in the ratio of male to female rates: in 1960 it was 11:1 and by 1978 it had declined to 5:1 (Table 6).

Although there is a declining age of the clientele in the ambulatory centres, similar to a trend evident among the clientele of special in-patient clinics, it is much less pronounced. Despite the creation of a new infra-structure of drug care centres that is specifically directed toward adolescents and young adults, this change is not accounted for in the statistics.

In the field of economy, it is a well-known law that demand is not based solely on need, but rather is also influenced by supply. This law is also valid for the domain of medical and psychiatrical health care and can be illustrated by the distribution of care institutions for alcohol dependents in Swiss cantons. The density of care centers correlates positively with the number of cases cared for (r=.45), however, with the consumption level in the cantons, this correlation is

TABLE 6

NUMBER AND RATE OF FIRST ADMISSIONS TO OUT-PATIENT ALCOHOLIC TREATMENT CENTRES, BY SEX, RATIO OF MALE TO FEMALE RATES (PER 100,000 POPUALTION), SWITZERLAND, 1959-1978

	Number			Rate			Ratio
Year	Male	Female	Total	Male	Female	Total	M:F
1959	2,851	218	3,069	111.66	8.02	58.23	13.9:1
1960	2,603	245	2,848	97.75	8.86	52.45	11.0:1
1961	2,474	224	2,698	90.41	7.93	48.53	11.4:1
1962	2,733	262	2,995	98.74	9.23	53.41	10.7:1
1963	2,900	257	3,157	103.17	8.84	55.21	11.7:1
1964	2,838	240	3,078	98.96	8.12	52.84	12.2:1
1965	3,024	303	3,327	105.51	10.05	56.58	10.5:1
1966	2,896	256	3,152	99.93	8.38	52.95	11.9:1
1967	3,060	333	3,393	104.19	10.75	56.21	9.7:1
1968	2,936	324	3,260	98.16	10.37	53.31	9.5:1
1969	3,019	311	3,330	99.77	9.85	53.85	10.1:1
1970	3,018	362	3,380	97.69	11.38	53.91	8.6:1
1971	2,920	351	3,271	95.52	10.98	52.31	8.7:1
1972	3,021	495	3,516	97.92	15.35	55.72	6.4:1
1973	2,782	404	3,186	89.67	12.44	50.17	7.2:1
1974	2,700	408	3,108	86.77	12.50	48.75	6.9:1
1975	2,901	471	3,372	93.95	14.51	53.24	6.5:1
1976	2,898	495	3,393	94.44	15.33	53.88	6.2:1
1977	2,801	539	3,340	91.41	16.70	53.08	5.5:1
1978	2,525	516	3,041	82.36	15.97	48.29	5.2:1

Source: Statistics of In- and Out-Patient Institutions for Alcoholics, Corresponding Years
Swiss Annual Statistics Books, Corresponding Years.

negative (r=-.24). In general, cantons with higher average consumption of alcohol have a lower density of institutions for the ambulant care of alcohol dependents. Since it is above all the western and southern Swiss cantons which show the highest consumption rates and the correspondingly fewer ambulatory care institutions, it appears that the social perception of "alcohol dependency" differs from that in the northern and eastern cantons.

TRAFFIC ACCIDENTS

In Switzerland, as in other countries, the motorization of the population has increased markedly. The number of motor vehicles more than doubled between 1965 and 1978. Up until the beginning of the 1970s, there was a parallel development between traffic accidents and the number of motor vehicles. Between 3.2 and 3.7% of all motor vehicles are involved in a traffic accident every year. Since 1972, however, the number of traffic accidents respective to the density of motor vehicles has decreased, thanks to various preventive measures (improvement of the road networks, speed limits, etc.). However, the relative decrease in both the total number of traffic accidents as well as fatal accidents since 1974 are, not due to police surveillance because, during this time, the relative proportion of traffic violation convictions decreased.

Alcohol-related traffic accidents have increased in relation to total traffic accidents since the early 1960s: in 1963, the proportion was 6.8%, by 1978 it was 9.6%. If the number of injuries in alcohol related traffic accidents is considered as a proportion of total injuries in traffic accidents, an increase of approximately 100% is evident for this time period - from 6.4 to 12.1%.

The fact that alcohol-induced psychomotor liabilities have ever graver consequences with the increase in traffic circulation can be seen from the following figures: in 1954, approximately 12% of all fatal accidents were alcohol related, but by 1978 this was the case in about 18% of all fatalities. The data also show that the percentage of injuries and fatalities in traffic accidents has increased more strongly than would be expected based on the portion of alcohol - related accidents within the total of all accidents. On the one hand this can be evaluated as an indication of the especially grave results of alcohol related accidents; on the other hand it should be observed that the portion of fatalities and injuries due to alcohol related accidents had markedly increased exactly during the period when the average alcohol consumption decreased. Therefore, one may speculate that the increase in alcohol-related traffic accidents and fatalities is mainly due to a change in the style of consumption.

The rate of automobile drivers convicted of driving in an intoxicated state is probably not only dependent on the average consumption of alcoholic beverages and the related attitudes towards the drinking of alcohol, but just as much on the general preventive effect of police control measures. It is noteworthy that although the withdrawals of driving licenses related to alcohol controls more than tripled from 1954 to 1977, in comparison to withdrawals of driving licenses for other reasons there was a decrease from 60% to 45%. In constrast to the clearly disproportionate increase of alcohol related traffic accidents, this is an indication of the decreasing resoluteness of the Swiss police department to enforce laws related to alcohol consumption.

This conclusion can also be drawn from the trend of convictions for drunken driving: the percentage of convicted drivers in relation to the total number of registered vehicles has decreased (Table 7). However, as mentioned previously, the proportion of alcohol related accidents has increased. Furthermore, if the number of convictions due to the operation of a motor vehicle in an intoxicated state is considered as a proportion of total number of convictions for all traffic laws, an analogous trend is evident: offenses due to drunkenness have declined relative to the total, but only until 1973. In 1974 a different criterion for recording offences was used which caused a disruption in the series (Table 7).

OTHER ACCIDENTS

Earlier studies have stressed that the intake of alcohol is not only one of the causes of traffic acccidents, but also of accidents during leisure time, at the place of employment or at home. Except for traffic acidents, there are no special statistics for causes of accidents in Switzerland which list "alcohol-induced" as a separate category. In a study by Kielholz *et al.* (1973) it was determined, however, that 19% of working accidents, 8% of sports accidents and 46% of the remaining non-traffic accidents were alcohol induced.

SUMMARY

Switzerland belongs to those countries with a high rate of consumption, concomitant with a high frequency and wide variety of alcohol related problems. Nevertheless, alcohol problems are to a great extent social constructs: temporal trends in alcohol problems include changes in social values and definitions and any observation of alcohol problems over time incorporates a perception of changes in social constructs.

The available evidence suggests that these phenomena themselves, their perception and evaluation, as well as the social reactions to them, have undergone a change. It seems that for Switzerland the results of the chronically excessive consumption of alcohol do not stand alone any longer in the forefront of social problem definitions. Also the results of episodic drinking, namely, accidents, are being increasingly observed. The development of mortality statistics also shows that statistics more frequently reflect the perception of problems by doctors rather than to point out the "real" problem rate.

Although heavy drinkers more prevalent among the higher social classes, the clientele taking advantage of the public treatment available, belong mainly to the lower social classes. However, since the beginning of the 1970s the first-admission rate for the higher social classes has increased. This trend can be understood as the result of an increasing medicalization and, along with this, the increasing removal of the blame from the individual for his alcoholism. The increasing diffusion of the concept of "alcoholism as illness" has also lead to the acceptability of treatment for alcohol dependence in public or semi-public institutions among members of the higher social classes.

Finally, the data indicate that the expansion of the supply has influenced the problem rate as least as much as vice versa. Actually the greatest change in the social reactions has taken place in the area of the judicial system, first of all

TABLE 7

NUMBER OF CONVICTIONS FOR DRUNKEN DRIVING, SWITZERLAND, 1965-1978

Year	Number of convictions for drunken driving	Percentage of convictions for drunken driving based on all offenses (SVG)	Proportion of convictions (1) per 10,000 motor vehicles
1965	6,620	17.04	43.83
1966	7,205	17.00	43.30
1967	7,110	16.71	40.05
1968	7,710	16.47	40.89
1969	7,723	15.44	37.87
1970	8,396	15.87	38.38
1971	9,235	16.59	39.61
1972	10,227	15.97	41.98
1973	10,205	14.35	39.80
1974 *	10,581	24.16	39.64
1975	10,906	24.74	40.06
1976	10,345	24.46	36.89
1977	10,955	24.83	37.81
1978	10,757	24.02	34.26

* In 1974 there was an increase in the fine limit for an entry in Register from Fr. 100 to Fr. 200

Sources: Convictions in Switzerland (Raw data)
Traffic Accidents in Switzerland

by limiting the content of alcohol in the blood for the operation of a motor vehicle and, secondly, by introducing the breath controllers which enable an easy determination of the concentration of alcohol in the blood. Consequently, with regard to traffic accidents, the "victimless crime" of excessive consumption of alcohol becomes an offense with possible victims. It appears that the tendency to reduce personal blame concerning the consumption of alcohol runs counter to a tendency to criminalize.

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ALCOHOL CONSUMPTION AND ALCOHOL-RELATED PROBLEMS IN THE NETHERLANDS, 1950-1980

by

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ALCOHOL CONSUMPTION AND DRINKING PATTERNS

In the post-war era the Netherlands have experienced a remarkable increase in the rate of consumption and proliferation of the uses of alcohol. Although all three main beverage types have undergone major increases in both absolute and per capita sales (Table 1), comparisons of the proportionate contribution to total ethanol sales show wine and beer increasing and spirits declining between 1950 and 1975 (de Lint, 1981: 88).

The Liquor Act regulates the on-premises consumption of alcoholic beverages and the off-premises consumption of alcoholic beverages of more than 15% alcohol by volume. For on-premises consumption there are different kinds of licences, depending on the type of alcoholic beverages to be sold. Generally, it is easier to obtain a licence for the sale of light alcoholic drinks, than for the sale of all alcoholic drinks. Ordinary shops, without a licence, may sell light alcoholic beverages for off-premises consumption. For strong alcoholic beverages the situation is different; only licenced victualler's shops may sell them. These shops may also sell beer, wine and non-alcoholic drinks, but they are not allowed to deal in food.

The actual number of outlets for on-premise consumption increased during the last decades (Table 2). However, a decrease is reported in the actual number of victualler's shops. But there may well have been an increase in the number of ordinary shops selling beer and wine for off-premises consumption. There is little information available on their proliferation (de Lint, 1981: 96).

Other factors such as increased economic access, transformation of cultural patterns, and changes in demographic composition are considered to be interrelated contributors to the rate of consumption. Not only has the "relative price" of alcohol declined in recent years (Odink, 1979), but consumer-item expenditures have increased more rapidly than savings, and socio-economic changes in the use of time and money have probably favoured alcohol consumption at the expense of other products and activities (de Lint, 1981).

Specific aspects of drinking patterns in the Netherlands can be deduced from four surveys. In 1958, Gadourek (1963) carried out an investigation on a representative sample (1,297 persons) of the general population of the Netherlands aged 20 years and over. A second general population survey in 1976

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TABLE 1

AVERAGE PER CAPITA CONSUMPTION OF ALCOHOLIC BEVERAGES IN LITRES OF ABSOLUTE ALCOHOL, THE NETHERLANDS, 1951, 1961, 1971, 1977, 1980

	Year - Rate Per 15+ Population				
Category	1951	1961	1971	1977	1980
Spirits[a]	1.88	1.70	2.90	3.85	3.52
Beer[b]	0.75	1.88	4.28	5.55	5.60
Wine[c]	0.11	0.40	1.40	1.86	2.00
All Beverages 15+	2.75	3.99	8.51	11.65	11.13
Total Pop.	1.9	2.8	6.2	8.8	8.8
Population[d] 15+	7,201	8,101	9,554	10,435	10,906
Total[d]	10,200	11,556	13,120	13,815	14,091

[a] As 100% ethanol.

[b] Converted to 100% ethanol by 0.05 factor.

[c] Converted to 100% ethanol by 0.12 factor.

[d] In 1,000s.

Source: PGD (Annual).

TABLE 2

TYPE AND NUMBER OF ESTABLISHMENTS PRODUCING AND DISTRIBUTING BEVERAGE ALCOHOL, THE NETHERLANDS, 1960, 1971, 1975, 1979

	1960	1971	1975	1979
Breweries	38	23	22	21
Distillers (beverage alcohol)	277	189	158	112
Outlets for off-premise consumption (beverages of more than 15% ethanol)	3,952	3,860	3,784	3,434
Inhabitants per outlet for off-premise consumption	2,907	3,425	3,593	4,088
Outlets for off-premise consumption per 100,000 population 15+	49	40	37	32
Outlets for on-premise consumption	23,794	34,761	35,612	34,293
Inhabitants per outlet for on-premise consumption	483	380	384	409
Outlets for on-premise consumption per 100,000 population 15+	296	360	349	317

Source: PGD (Annual).

by Sijlbing (1978) involved the population aged 12 to 70 years. Van der Wal carried out two surveys among teenagers in the City of Utrecht, one in 1969 (Van der Wal, 1971) and one in 1976 (Van der Wal, 1978). The 1976 general population survey indicated that 93% of males aged 20 and older and 82% of females were drinkers. These proportions had increased by 7% (males) and 3% (females) from the 1958 survey. In 1976 the proportion of drinkers was highest among those aged 25 to 39 (92-95% for males; 88% for females). Also a close male-female ratio of drinkers is evident: 1.05:1 for those between 25-29 and 1.08:1 for the 30-39 age group.

Drinking is also common among young people. From 1969 to 1976 the number of children aged 12 to 18 that drink remained almost constant at 70% and 68%, respectively. However, the frequency and quantity increased. Between 1969 and 1976, the proportion reporting having had a drink in the week before the interview increased from 30% to 50%. The increase was greater among girls than boys, and greater for those in their early teens than older teenagers.

In the Netherlands, drinking tends to take place at home. According to the 1976 survey, 65% of the drinkers indicated that their last drinking occasion was at home, 7% indicated a bar or restaurant, 1% work, the remaining 27% somewhere else. Bar and restaurant drinking is most often reported among those aged 12-18 years of age and less common among those aged 25 to 29.

Daily drinking is most often reported by males aged 40 and older followed by males aged 25 to 39. A similar pattern is evident for females, with the exception of those aged 30 to 39 which are below the mean. Males aged 19 to 24 are particularly over-represented among those having a "few drinks a week," and teenagers, especially females, are more likely to appear in the infrequent categories such as "once a week," "a few times a month," or less often (Sijlbing, 1978).

Apparently there is a higher proportion of heavy drinkers among young adult males and females. For males, 16.1% of those in the 19 to 24 age group reported consuming more than six glasses at the last drinking occasion; among females, 7.5% in the 25 to 29 age group reported this level (see Table 3). In general, the proportion of heavy drinkers is inversely related to the yearly gross income: ranging from 7.9% for those earning less than 15,000 Dutch gilders to 2.6% with incomes of 39,000 or more (Sijlbing, 1978).

NATURE AND EXTENT OF ALCOHOL-RELATED PROBLEMS

Mortality

Some indicators of alcohol-related mortality show an increase and others do not. Among the three typically linked to heavy consumption (liver cirrhosis, alcoholism and alcoholic psychosis) the first is considered the most valid indicator, involves the highest volume of cases and also shows an increase over the previous decade from 1950 onward.

TABLE 3

PERCENTAGE OF DRINKERS AND HEAVY DRINKERS BY AGE AND SEX, THE NETHERLANDS, 1976

Category	Age					
	12-18	19-24	25-29	30-39	40+	Total
Drinkers:[a]						
Male	53	91	92	95	88	86
Female	47	80	88	88	77	76
Heavy Drinkers:[b]						
Male	6.0	16.1	6.0	8.6	5.5	10
Female	2.3	4.5	7.5	1.8	1.8	3

[a] "Do you ever drink alcoholic beverages?"

[b] Consumed "more than 6 glasses at the last drinking occassion"

Source: Sijlbing, 1978.

In 1950 the rate for liver cirrhosis was 3.9 per 100,000 persons aged 20 and older and had climbed to 6.7 by 1980. In contrast "alcoholism" mortality rates fluctuated between 0.7 and 0.3 with peaks in 1950 and 1970. The few alcoholic psychosis deaths resulted in an increase followed by a decline (Table 4).

Despite the overall substantial increase in the rate of liver cirrhosis mortality, the steepest increase in the rate (40% between 1950 and 1960) was not in the same decade as the steepest increase in the rate of consumption (116% between 1960 and 1970). Furthermore, in line with de Lint's (1981) interpretation, it is evident that while the per adult rate of consumption increased some 300% in the post-war decades, liver cirrhosis mortality among adults increased by only 71% (Tables 1 and 4).

Morbidity

The general hospital admission rates for some selected disorders linked to heavy alcohol consumption have increased between 1971 and 1976. Of the six diagnoses considered, the increase is most dramatic for liver cirrhosis (Laennec) which also represented the largest volume of cases. The male rate climbed from 6.9 to 18.4 per 100,000 (+ 167%), and the female rate went from 2.5 to 7.6 (+ 204%) (Table 5).

Statistics for the 1970s indicate substantial increases in general hospital admissions for the alcohol-related diagnostic categories of "alcoholism," "delirium tremens," "other alcohol psychosis," "toxic effects of alcohol" and "toxic effects of combined use of alcohol and drugs" taken together (Table 6). The rate per 100,000 rose from 15 to 44 for males and from 3 to 15 for females over the last decade. The steepest increase involves some of the low volume diagnoses such as "toxic effects of combined use of alcohol and drugs." In general, the volume of female cases rose more rapidly than males, although in most instances remained well below the levels for males.

As indicated in Table 6, general hospital admissions for alcoholism, delirium tremens and other alcoholic psychosis (combined) numbered about 2,000. For example, in 1973 there were 1,718 male admissions and 364 female admissions. In addition, there were a substantial number of admissions to psychiatric hospitals with these diagnoses. The 1973 figures are 1,136 for males and 236 for females. Psychiatric hospital admissions for alcoholism and alcoholic psychosis have also increased dramatically in the 1970s. Between 1971 and 1977 the absolute numbers climbed from 769 to 1,392 for males, and from 142 to 388 for females (Kok, 1977; Schippers, 1981).

There are 20 Consultation Bureaus in large and middle-large towns, with branches and consulting-hour facilities in many other places. Apart from these Bureaus there are several alcohol and drug clinics, offering inpatient treatment for addicts. The Consultation Bureaus offered in 1970 ambulant care to 10,963 alcohol patients. In 1979 this figure was 16,578, thus an increase of 51%. Information from the alcohol and drug clinics also indicates increased activity, particularly since 1976. For the time period 1974 to 1980 the number of beds has increased from 302 to 529 (+75%), the mean number of patients* from 271 to 491 (+81%) and treatment days from 109,000 to 190,600 (+75%).

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* The numbers refer to all patients in the Alcohol and Drug Clinics, so drug addicts are included. Source: FZA (Annual).

TABLE 4

MORTALITY FROM LIVER CIRRHOSIS, ALCOHOLISM, AND ALCOHOLIC PSYCHOSIS, AS THE PRIMARY CAUSE OF DEATH, THE NETHERLANDS, 1950, 1960, 1970, 1980

Causes of Death	Year			
	1950	1960	1970	1980
Liver Cirrhosis:				
Rate[a]	3.9	5.6	6.0	6.7
N[b]	251	400	509	661
Alcoholism:				
Rate	0.7	0.3	0.6	0.3
N	42	24	51	31
Alcoholic Psychosis:				
Rate	0.1	0.2	0.3	0.2
N	9	14	22	16

[a] Rate per 100,000 population aged 20 and older.

[b] Number of cases in popluation age 20 and older. Population as of December 31st.

Source: CBS (Annual, a).

TABLE 5

CLINICAL MORBIDITY FROM SELECTED DISORDERS, TOTAL NUMBER, AND RATE PER 100,000, THE NETHERLANDS, 1971, 1976

Diagnosis	Sex	1971 Number of Cases	1976 Number of Cases	1971 Rate	1976 Rate
Liver Cirrhosis (Laennec):	M	454	1,262	6.9	18.4
	F	166	528	2.5	7.6
Cirrhosis (not specified):	M	345	401	5.2	5.9
	F	323	376	4.9	5.4
Pancreatitis, Chronic:	M	134	229	2.0	3.3
	F	76	108	1.2	1.6
Pancreatitis, Acute:	M	402	553	6.1	8.1
	F	457	503	6.9	7.3
Cancer of the Oesaphagus:	M	382	424	5.8	6.2
	F	176	242	2.7	3.5
Cancer of the Liver:	M	69	129	1.0	1.9
	F	66	94	1.0	1.4

Source: Hoogendoorn, 1978.

TABLE 6

GENERAL HOSPITAL ADMISSIONS FOR ALCOHOL-RELATED DISORDERS, BY SEX, TOTAL NUMBER, AND RATE PER 100,000 POPULATION THE NETHERLANDS, 1969, 1973, 1975, 1979

Diagnosis	Sex	Year 1969	1973	1975	1979	Percent Change 1969-1979
Alcoholism*	M	600	1,434	1,873	2,131	255%
	F	100	290	484	652	552%
Delirium Tremens	M	162	164	204	203	25%
	F	22	32	32	35	59%
Other Alcohol Psychosis	M	142	120	225	243	71%
	F	22	42	66	79	259%
Toxic Effects of Alcohol	M	62	129	256	316	410%
	F	40	88	85	155	288%
Toxic Effects of Combined Use of Alcohol and Drugs	M	16	117	144	194	1,113%
	F	8	63	117	164	1,950%
Total N	M	982	2,064	2,907	3,087	214%
	F	192	515	826	1,090	468%
Rate per 100,000	M	15	31	42	44	193%
	F	3	8	12	15	400%

* Patients can be admitted under several diagnoses: chronic alcoholism, character degenerations because of alcoholism, alcoholism and addiction to alcohol, here taken together as "alcoholism."

Sources: Hoogendoorn, 1976; Stichting Medische Registratie: personal communication, 1981.

SOCIAL PROBLEMS

Divergent patterns are evident with regard to public order problems involving alcohol. Public drunkenness offences -- that is recorded events -- have declined since the early 1960s, whereas the percentage intoxicated at the time of the offence (all categories) has increased (Table 7).

The rate of public drunkenness has fallen from 70 per 100,000 population in 1960 to 33 in 1975. By 1975 "drunk and disorderly" offences have dropped to one-half of their 1960 level which involved a decline in the rate which was one-quarter the earlier level. However, in 1975 a larger proportion of persons were intoxicated at the time of the offence than in 1960: from 17.0 to 23.2% for males and from 1.6 to 4.4% for females.

Data on changes in drinking and driving habits are difficult to interpret because of an alteration of Article 26 of the Road Traffic Act in November 1974. One of the main changes in the Act was a replacement of the expression "driving while intoxicated;" since 1974 it is a felony to drive with a BAC higher than 0.5 per mille, as is the refusal to have a blood sample taken.

The official statistics of traffic offences indicate (perhaps because of the change in the Road Traffic Act) a remarkable increase in the number of DWI convictions (211% increase between 1970 and 1978) (de Zwart, 1981). The number of drivers who "refused to have a blood sample taken to determine BAC," an offence introduced in 1974, was 853 in 1975. This figure rose to 2,482 in 1978, resulting in an increase of 191% over three years (CBS Annual, c).

There was also an increase in the percentages of traffic accidents in which alcohol was involved; this is evident for accidents with injuries, as well as for accidents with lethal consequences (Table 8).

ATTITUDES TOWARD ALCOHOL CONSUMPTION

Attitudes toward the use, and the (consequences of) excessive use of alcohol in the Netherlands are quite permissive. Only 3% of the respondents in the 1976 survey stated that "people had better not drink at all," and by far the majority found that youths should be allowed to drink at 16 (the legal age) (Sijlbing, 1978).

Nine out of 10 drinkers are not concerned about their own drinking habits. They feel they are moderate drinkers, and therefore they do not intend to change their drinking pattern or to stop drinking (Adriaanse *et al.*, 1981).

However, the increase during the last decade in the consumption of alcoholic beverages has begun to raise interest, judging from the articles in leading newspapers and magazines, and the scientific press. In 1975 the (then) Minister of Public Health and Environmental Hygiene advocated a policy of "discouragement" to decrease the current trend; the present Government is formulating a coherent alcohol policy and gives highest priority to a revision of the Liquor Act.

TABLE 7

ALCOHOL OFFENDERS AND INTOXICATED OFFENDERS, THE NETHERLANDS, 1960, 1965, 1970, 1975

Category	Year			
	1960	1965	1970	1975
Drunk and Disorderly				
Total	472	330	161	194
Rate[a]	4	3	1	1
Public Drunkenness				
Total	8,097	6,301	4,474	4,462
Rate[a]	70	51	34	33
Intoxicated[b] Offenders				
Total	3,345	4,440	4,982	4,807
Perc. of Offenders	14.6	19.8	21.6	21.1
Male	3,286	4,355	4,925	4,694
Perc. of male offenders	17.0	23.5	25.1	23.2
Female	59	85	57	113
Perc. of female offenders	1.6	2.2	1.6	4.4

[a] Rate per 100,000 population.

[b] Offenders aged 18+ of all categories of offences, intoxicated at time of offence.

Sources: de Zwart, 1981; CBS (Annual, b).

TABLE 8

NUMBER OF TRAFFIC ACCIDENTS IN WHICH THE USE OF ALCOHOL WAS ESTABLISHED, THE NETHERLANDS, 1970, 1976, 1978

Category	Year		
	1970	1976	1978
Total accidents with injuries	56,004	52,085	51,460
Accidents with injuries in which the use of alcohol was established			
Number	3,657	4,293	4,806
Perc. of total	6.53%	8.24%	9.21%
Total accidents with lethal consequences	2,879	2,238	2,085
Accidents with lethal consequences in which the use of alcohol was established			
Number	327	292	314
Perc. of total	11.36%	13.05%	15.06%

Source: de Zwart, 1981; CBS (Annual, d).

In a recent survey (Adriaanse *et al.*, 1981) the majority of respondents indicated that they do not object to (some) restrictive measures like raising the price of alcoholic beverages, fewer off-premise outlets, restriction of opening hours, rationing of alcoholic beverages or a lowering of the alcohol content of beverages. However, most Dutchmen would not accept a total ban on the sale of alcoholic beverages in public places.

Although public opinion is gradually changing, other social and health problems are probably considered more important: the use of heroin, and most of all unemployment among large segments of the population.

SUMMARY

Since 1950 alcohol consumption of the adult Dutchmen has quadrupled. Increased availability and changes in cultural patterns are supposed to have contributed to this increase. The changes in the overall consumption can not be explained exclusively by the slight increase in the percentage of drinkers, but may be caused mainly by significant changes in drinking patterns. Alcoholic beverages are now consumed at many occasions and drinking is becoming a daily habit for many Dutchmen.

Most categories of problems related to excessive drinking show an increase in the last decades. Rates of mortality and especially morbidity from liver cirrhosis augmented considerably. Admissions to general and psychiatric hospitals for alcohol related disorders like alcoholism and alcohol psychosis also show remarkable increases, in particular for females. Some data suggest an enlargement of certain social problems related to alcohol. The number of offenders intoxicated at the time of the offence and the number of DWI-offenders have risen. In addition the percentage of traffic accidents in which alcohol was involved increased. However, there is a sharp decline in the rate of public drunkenness and drunk and disorderly offences.

Summarizing these statistical data, we can conclude that the higher rate of alcohol use in the Netherlands has led to a gradual increase in a variety of alcohol-related problems.

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SOME CONSEQUENCES OF THE INCREASE IN ALCOHOL CONSUMPTION IN IRELAND SINCE 1950

by

Dermot Walsh*

INTRODUCTION

Ireland has, at least since World War 1 been one of the lowest consumers of alcohol among European nations. However, since 1950 and more particularly since the mid-1960s increased affluence has resulted in increased disposable income and consumer expenditure on luxury goods. Among these are alcohol whose consumption has almost doubled in this time period. Since 1979, however, alcohol consumption has decreased (Table 1, Figure 1).

Coincidentally a number of indices of what are usually considered alcohol-related damages have also shown increases. Unfortunately, data on these items are rather restricted and accordingly the consequences dealt with in this paper will be limited to suicide, mortality from cirrhosis of the liver, mortality from alcoholism and alcoholic psychosis, prosecutions and convictions for driving or attempting to drive a motor propelled vehicle while drunk, and prosecutions and convictions for drunkenness and admissions to psychiatric hospitals for alcoholism.

MORTALITY DUE TO SUICIDE

Table 2 gives the numbers and rates per 100,000 of population of deaths returned as suicide in the Registrar General's Report on Vital Statistics each year. The cause of death in most cases of possible suicidal deaths is ascertained by the coroner who then completes a death certificate. The death certificate is then coded at the Central Statistics Office. The process is complicated; it is variable from coroner to coroner and in the two stage procedure the coroner's ascertainment and the coder's interpretation are likely to result in an underestimation of the "real" incidence of suicide.

Details of the ascertainment procedure and its limitations have been discussed in McCarthy and Walsh (1975). There are grounds however for believing that the under-estimation of the incidence of suicide may be reliable and unvarying over time (Brugha and Walsh, 1978). On the other hand recent evidence suggests that a higher proportion of suicide deaths, particularly by drowning are being classified as due to suicide (Walsh, 1978).

The data presented here must be interpreted in the light of these reservations but suggest strongly that overall there has been a real increase in suicide incidence in Ireland since 1950, even if, unlike the consumption increase, the growth of suicide has mainly occurred since 1972 (Table 2).

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TABLE 1

ALCOHOL CONSUMPTION PER HEAD OF POPULATION AGED 15 AND OVER IN LITRES OF 100 PER CENT ALCOHOL, IRELAND, 1950-1979

	Beer	Spirits	Wine	Total
1950	3.34	1.20	0.13	4.67
1951	3.56	1.21	0.14	4.91
1952	3.34	0.95	0.12	4.41
1953	3.29	0.98	0.13	4.40
1954	3.29	1.06	0.14	4.49
1955	3.39	1.08	0.15	4.62
1956	3.48	1.05	0.15	4.68
1957	3.40	0.99	0.15	4.54
1958	3.31	1.03	0.15	4.49
1959	3.43	1.08	0.16	4.67
1960	3.48	1.15	0.17	4.80
1961	3.73	1.38	0.19	5.30
1962	3.75	1.30	0.19	5.24
1963	3.84	1.39	0.21	5.44
1964	3.97	1.50	0.24	5.71
1965	4.02	1.56	0.25	5.83
1966	4.03	1.53	0.24	5.80
1967	4.10	1.56	0.25	5.91
1968	4.27	1.73	0.27	6.27
1969	4.59	1.93	0.28	6.80
1970	4.76	2.06	0.31	7.13
1971	5.04	2.21	0.32	7.57
1972	5.31	2.43	0.35	8.09
1973	5.65	2.75	0.40	8.80
1974	6.19	2.82	0.43	9.44
1975	5.81	2.91	0.43	9.15
1976	5.59	2.83	0.43	8.85
1977	5.63	3.00	0.46	9.09
1978	5.79	3.35	0.56	9.64
1979*	6.05	3.30	0.61	9.96
1980	6.42	3.00	0.57	9.99
1981	6.20	2.80	0.82	9.82

Sources: Annual Reports of Revenue Commissioners; Irish Statistical Bulletin.

Notes: (1) The Revenue Commissioners' data refer to "net duty paid" beer (imported and home-made); spirits and wine "retained for home use."

(2) A standard barrel of beer, proof gallon of spirits, and gallon of wine were taken as equal to 7.86, 2.6 and 0.568 litres of absolute alcohol respectively.

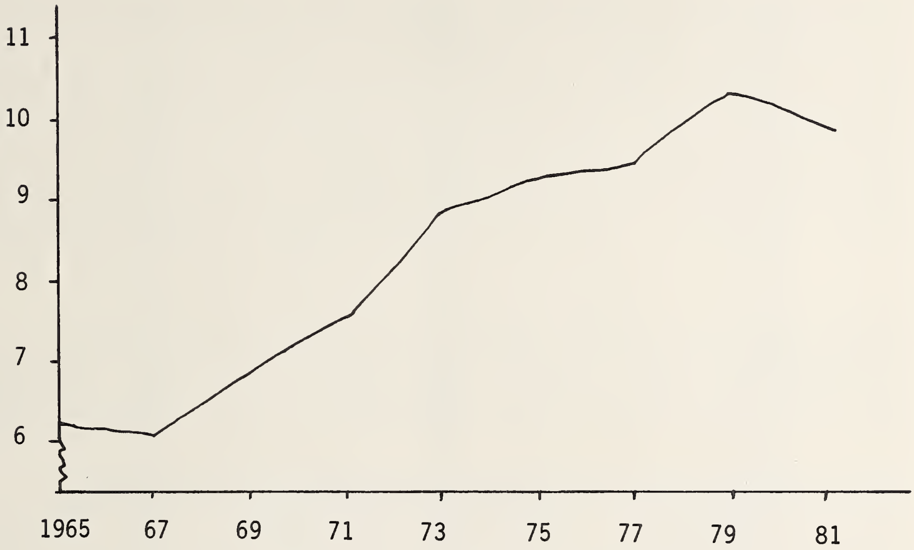
(3) Up to 1974 the data were for years ending on 31 March. Weighted averages of adjacent years have been taken to obtain calendar year figures.

(4) These quantities include consumption by visitors to Ireland but exclude consumption by Irish people while abroad.

* Estimate

FIGURE 1

LITRES OF ALCOHOL CONSUMED PER CAPITA AGED 15 AND OLDER, IRELAND, 1965-1981



Source: The Medico-Social Research Board.

TABLE 2

SUICIDE, NUMBERS AND RATES PER 100,000 POPULATION, IRELAND, 1950-1980

	Number	Rates
1950	76	2.6
1951	77	2.6
1952	66	2.2
1953	62	2.1
1954	59	2.0
1955	68	2.3
1956	76	2.6
1957	73	2.5
1958	77	2.6
1959	72	2.4
1960	84	2.8
1961	89	3.2
1962	52	1.9
1963	70	2.5
1964	58	2.1
1965	51	1.8
1966	69	2.4
1967	72	2.5
1968	71	2.5
1969	52	1.8
1970	52	1.8
1971	81	2.7
1972	90	3.0
1973	105	3.5
1974	118	4.0
1975	148	5.0
1976	183	6.1
1977	151	5.1
1978	105	3.5
1979	169	5.0
1980	230	6.8
1981	217	6.3

Source: Annual Reports of the Registrar General on Vital Statistics.

MORTALITY FROM CIRRHOSIS OF THE LIVER

Although by the end of the 19th century Ireland had achieved a relatively high level of mortality from liver cirrhosis this declined substantially during the First World War and has remained at a remarkably low level since then. Data from 1950 onwards are presented in Table 3 and Figure 2.

The data indicate a generally rising trend numerically and in rates per 100,000 of population since 1950. However, the numbers of deaths are still quite low and the rate of increase has been irregular and unconstant. Whereas the 1980 rate is almost double that of 1950 and in general rates have been consistently higher in the second half of the period under study than the first half, there have been fluctuations within each period. It is, too, important to bear in mind that in the intercensal period 1970-79 there has been a considerable increase in population but rates up to 1978 have been calculated on the basis of the 1971 census so that for the later years of 1976-77 and 1978 rates are raised artificially because the earlier census has been used. Since 1978 cirrhosis mortality rates have declined.

Overall, though, consumption of alcohol in Ireland, and indeed alcohol abuse, appears to endanger the liver less than is the case in wine-drinking countries. Ireland, for example, with a current alcohol consumption of approximately half of that of France has a liver cirrhosis mortality that is only one-tenth of that country.

The usual explanation, rightly or wrongly, is that the pattern of drinking in Ireland is episodic, i.e., heavy intake at weekends with abstinence for the first three days of each succeeding week compared with a constant heavy intake in wine drinking countries. It is assumed that even a couple of days abstinence a week gives the liver parenchyma time to recover from the toxic effects of alcohol whereas no such relief is given in the constant intake characteristic of wine drinking countries. However, it is highly likely that patterns of drinking in Ireland have changed from exclusively episodic to more constant intake.

MORTALITY FROM ALCOHOLISM AND ALCOHOLIC PSYCHOSIS

These causes of mortality are very minor and may for practical purposes be ignored as a consequence. However, since it is of more importance in some other countries, data on it have been included here for comparative purposes (Table 4). 't can be seen that the numbers of persons certified as dying from these combined causes of death, and consequently their mortality rate, is very small indeed. On the other hand, the number of alcoholism admissions to psychiatric hospitals is substantiated and has increased several-fold between 1966-1978, and declined since then (Figure 3).

One might expect that deaths from alcoholic psychosis including delirium tremens have been relatively frequent in the early part of the time period under review when treatment of this condition was much less developed than it is today. However, the reverse seems to be the case and if anything there has been an increase in the number of deaths. From 1968 deaths are specified for each cause individually and it is seen that generally alcoholism deaths exceed those of

TABLE 3

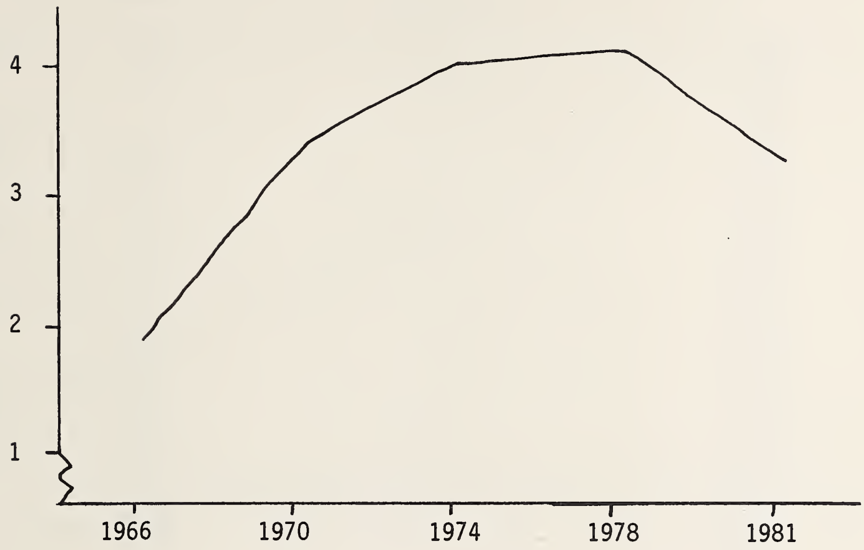
LIVER CIRRHOSIS DEATHS, NUMBERS AND RATES PER 100,000 POPULATION, BY SEX, IRELAND, 1950-1980

	Total		Male		Female	
	N	Rate	N	Rate	N	Rate
1950	61	2.1	37	2.5	24	1.6
1951	59	2.0	40	2.7	19	1.3
1952	70	2.4	49	3.3	21	1.4
1953	47	1.6	34	2.3	13	0.9
1954	49	1.7	29	1.9	20	1.4
1955	68	2.3	37	2.5	31	2.1
1956	69	2.3	46	3.1	23	1.6
1957	60	2.0	42	2.8	18	1.2
1958	69	2.3	42	2.8	27	1.9
1959	61	2.1	36	2.4	25	1.7
1960	56	1.9	38	2.5	18	1.2
1961	66	2.3	42	3.0	24	1.7
1962	80	2.8	50	3.5	30	2.1
1963	67	2.4	44	3.1	23	1.6
1964	78	2.8	56	4.0	22	1.6
1965	89	3.2	59	4.2	30	2.1
1966	58	2.0	36	2.5	22	1.5
1967	76	2.6	53	3.7	23	1.6
1968	91	3.2	52	3.6	39	2.7
1969	104	3.6	63	4.3	41	2.9
1970	99	3.4	62	4.3	37	2.6
1971	74	2.5	44	2.9	30	2.0
1972	111	3.7	63	4.2	48	3.2
1973	105	3.5	61	4.1	44	3.0
1974	115	3.9	75	5.0	40	2.7
1975	93	3.1	50	3.3	43	2.9
1976	114	3.8	69	4.6	45	3.0
1977	108	3.6	60	4.0	48	3.2
1978	126	4.2	75	5.0	51	3.4
1979	101	3.0	66	3.9	35	2.1
1980	130	3.9	78	4.6	52	3.1
1981	113	3.3	63	3.6	50	2.9

Source: Annual Reports of the Registrar General on Vital Statistics.

FIGURE 2

LIVER CIRRHOSIS DEATH RATE PER 100,000 POPULATION, IRELAND, 1966-1981



Source: The Medico-Social Research Board.

TABLE 4

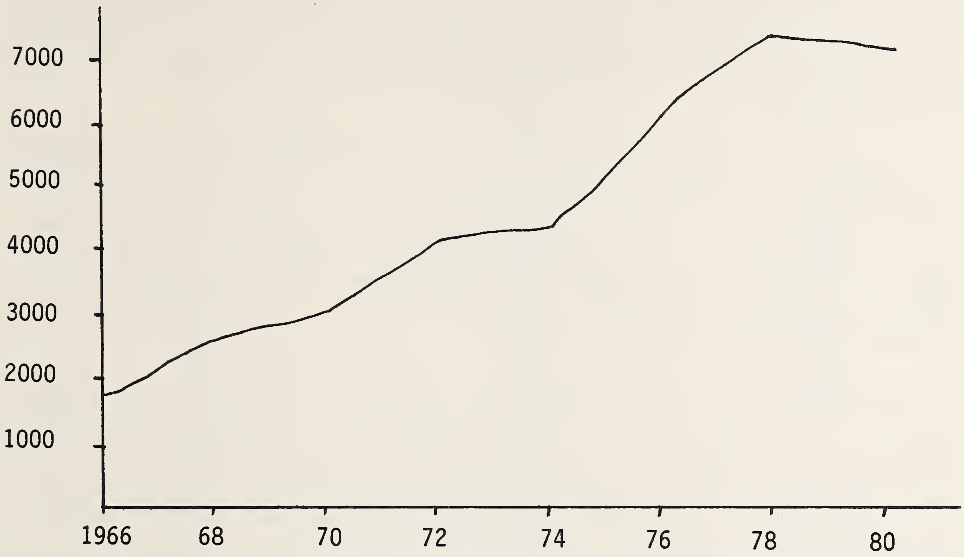
ALCOHOLISM AND ALCOHOLIC PSYCHOSIS DEATHS, NUMBERS AND RATES PER 100,000 POPULATION, IRELAND, 1950-1980

	Numbers	Rates
1950	3	0.1
1951	3	0.1
1952	-	-
1953	-	-
1954	1	0.03
1955	5	0.17
1956	4	0.14
1957	3	0.1
1958	6	0.2
1959	2	0.1
1960	4	0.14
1961	6	0.21
1962	7	0.25
1963	8	0.28
1964	3	0.11
1965	7	0.25
1966	2	0.07
1967	6	0.21
1968	7	0.24
1969	7	0.24
1970	5	0.17
1971	9	0.3
1972	8	0.27
1973	12	0.40
1974	9	0.3
1975	12	0.4
1976	13	0.44
1977	8	0.27
1978	18	0.53
1979	-	-
1980	-	-

Source: Annual Reports of the Registrar General on Vital Statistics.

FIGURE 3

ALL ALCOHOLISM ADMISSIONS TO PSYCHIATRIC HOSPITALS, IRELAND, 1966-1980



Source: The Medico-Social Research Board.

alcoholic psychosis which may reflect the improved treatment of delirium tremens during this time period.

PROSECUTIONS AND CONVICTIONS FOR DRUNKENNESS

Data for these items are published each year in the Garda (Police) Commissioner's Report on Crime. The format of these annual reports has changed on several occasions during the time period under review and data on convictions are lacking from 1963 to 1973. Data on prosecutions are, we believe comparable from year to year and it is unlikely that any artifacts exist in the compilation of the data. We, therefore, can make direct comparisons on a time series basis (Table 5).

It can be seen that the number of prosecutions for drunkenness increased from 3,773 in 1950 to 6,242 in 1980. However, most of this increase occurred from 1973 onwards, there being little increase until then. In fact the increase in 1972-73 is quite dramatic and enquiries from the police indicate a change at that time in policy leading to greater availability of police and a more rigid enforcement of the law in relation to this behaviour with more arrests. Since 1980 and therefore co-incident with the decline in alcohol consumption, prosecutions for drunkeness have declined.

To what extent greater visibility of drunkenness or more rigid police behaviour in relation to it can explain the variations in numbers over this time period is, of course, speculative. It can be seen from the data on convictions that, generally speaking, the major proportion of prosecutions resulted in convictions which indicates that most of the cases brought to court were of severe drunkenness and presumably individuals were therefore unable to absolve themselves before the court. There is some tendency for the proportion of convictions to decrease in recent years.

ALCOHOL AND TRAFFIC

Prosecutions and convictions for driving or attempting to drive a motor propelled vehicle while drunk is another consequence which has been the subject of great variation both in relation to the law and its application during the time period under survey. In the earlier years of the 1950s and the 1960s prosecutions for drunkenness were supported by "soft" medical evidence as to drunkenness, i.e., judges in court adjudicated on the drunkenness issue on the expert evidence of a doctor testifying on the basis of clinical criteria. Doctors called to examine individuals in police stations used simple tests of co-ordination, i.e., whether the suspect was able to walk in a straight line, pick coins from the floor and so on. Usually persons failing these tests were in a severe state of intoxication.

Later in the 1960s a urine test followed by a blood sample was introduced. At first the level was 125 milligrams per cent where blood alcohol was concerned, later in 1978 this level was reduced to 100 milligrams per cent. During the life time of urine and blood sampling however lawyers have been so successful in obtaining acquittals on technical grounds that at one stage in 1972 and again in 1976 prosecutions were actually halted until a new and tighter legislation was introduced (Table 6). Since 1961 the number of prosecutions has increased from 651 with a peak of 8,364 in 1980, followed by a sharp decline (Figure 4).

TABLE 5

DRUNKENNESS, NUMBER OF PROSECUTIONS AND CONVICTIONS IRELAND, 1950-1980

	Prosecutions	Convictions
1950	3773	3199
1951	3746	3182
1952	3762	3206
1953	4091	3438
1954	3714	3020
1955	3801	3182
1956	3838	3311
1957	3431	2876
1958	3080	2526
1959	2992	2479
1960	3180	2546
1961	3094	2589
1962	3170	2629
1963	3169	-
1964	3429	-
1965	3644	-
1966	3484	-
1967	3529	-
1968	3552	-
1969	3133	-
1970	2853	-
1971	3339	-
1972	3303	-
1973	4468	-
1974	4605	3647
1975	4643	3747
1976	4540	3599
1977	5804	4528
1978	5948	4532
1979	6266	4916
1980	6242	4837
1981	5827	4838

Source: Garda Commissioner's Reports on Crime 1950-1980.

TABLE 6

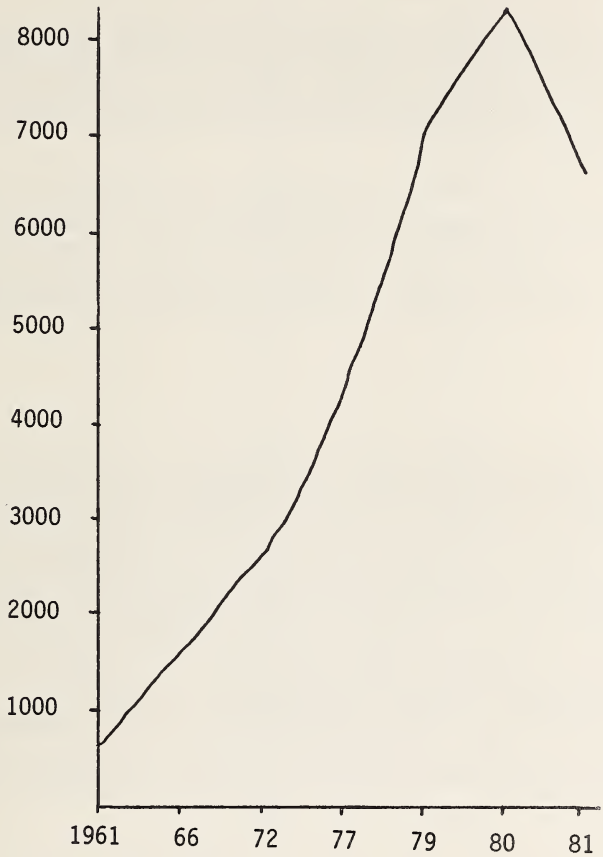
DRIVING OR ATTEMPTING TO DRIVE WHILE DRUNK, NUMBER OF PROSECUTIONS AND CONVICTIONS, IRELAND, 1950-1980.

	Prosecutions	Convictions
1950	469	-
1951	622	-
1952	638	-
1953	669	-
1954	583	-
1955	670	-
1956	722	-
1957	423	-
1958	349	-
1959	479	-
1960	535	-
1961	651	-
1962	912	-
1963	962	-
1964	1208	-
1965	1321	-
1966	1666	-
1967	1742	-
1968	1736	-
1969	1713	-
1970	1394	-
1971	3071	1655
1972	2554	1860
1973	3395	2062
1974	4721	2526
1975	4218	2157
1976	3210	1609
1977	4356	2279
1978	3685	2435
1979	7017	4644
1980	8364	6284
1981	6675	5172

Source: Garda Commissioner's Reports on Crime 1950-1980.

FIGURE 4

NUMBER OF PROSECUTIONS FOR DRIVING OR ATTEMPTING TO DRIVE WHILE DRUNK, IRELAND, 1961-1981



Source: The Medico-Social Research Board.

The data presented here illustrate the ups and downs of the approach to drunk-driving problems, the frequency and success rate of prosecutions. However, it appears that 1979 and 1978 have seen a more determined attitude on the part of the police with a very high number of prosecutions and also a relatively successful conviction rate.

ADMISSIONS TO PSYCHIATRIC HOSPITALS FOR ALCOHOLISM

There has been a quite dramatic increase in the number of admissions for alcoholism and alcoholic psychosis, which now is the principal reason for admission to psychiatric hospitals, accounting for per cent of admissions in 1980. Since 1979, however, like the other damages reviewed, admissions for alcoholism have also declined (Table 7, Figure 5).

Even though some of the admission increase may be attributed to a greater acceptance of the psychiatric hospital by the community as a treatment centre and an expectation of the public that "alcoholism" can be "cured", it seems inescapeable that the main reason for the increased hospitalisation of "alcoholics" is that with the increase in alcohol consumption there simply are more of them.

CONCLUSIONS

The data presented on several indices of alcohol abuse and its consequences indicate that in line with increased alcohol consumption in this country in recent years there has been an increase in various physical and social problems. However the increase has not been dramatic and one might even go as far as to say that the near doubling of alcohol consumption since 1950 has not been accompanied by a proportionate increase in adverse consequences. Only suicide and increased prosecutions for drunk-driving show increases in proportion to consumption upturns. And in the case of drunk-driving, earlier practises, legislative provisions and general uncertainties as to the value of the data suggest that the considerable increase in prosecutions is explicable in part by stricter legislation and more rigid application of it. The difficulties in determining the extent to which the increased prosecutions represent increased incidence of drunken driving are so great as to make this exercise virtually impossible.

TABLE 7

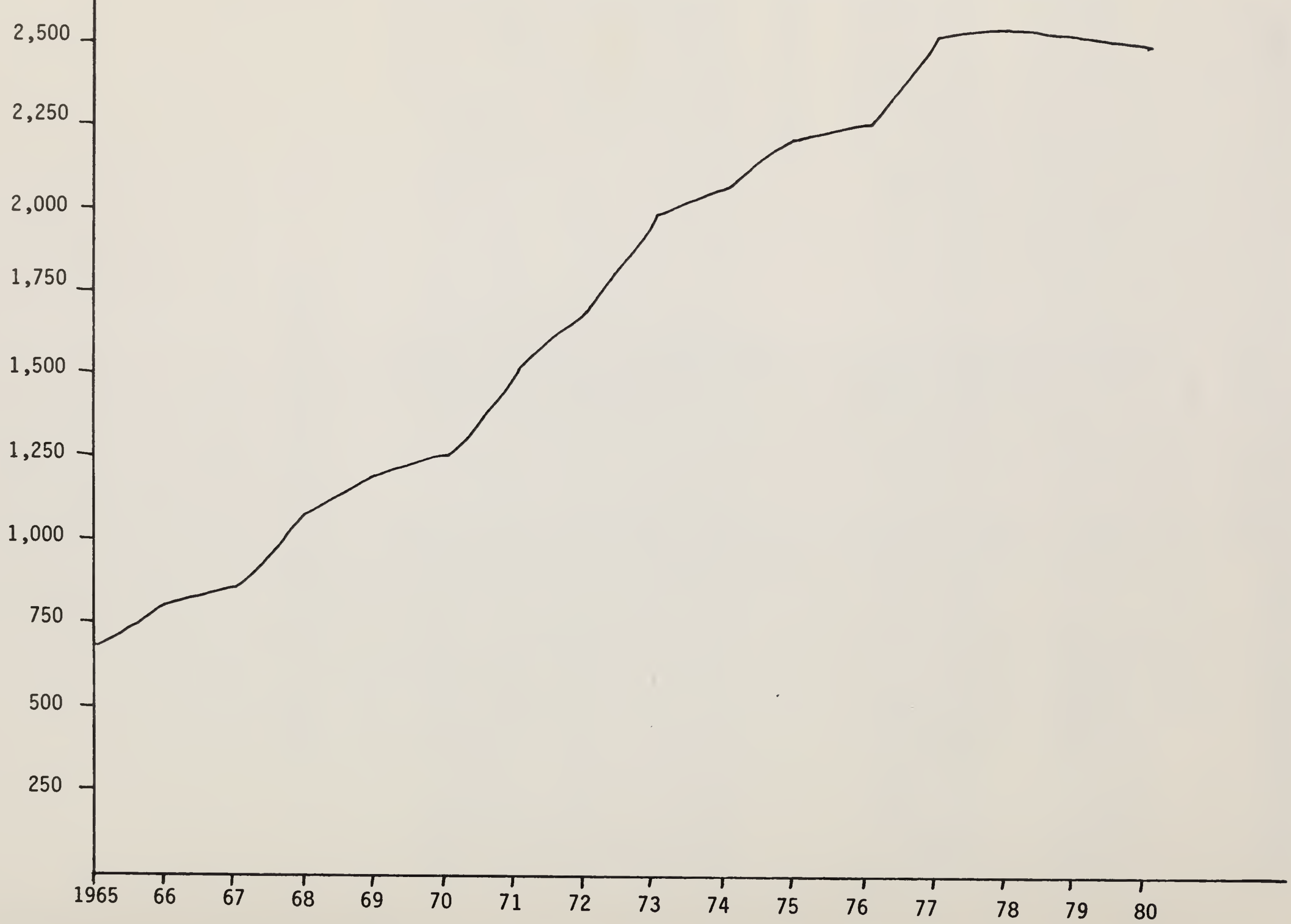
FIRST ADMISSIONS TO IRISH PSYCHIATRIC HOSPITALS FOR ALCOHOLISM, IRELAND, 1965-1980

1965 - 699
1966 - 800
1967 - 864
1968 - 1,081
1969 - 1,186
1970 - 1,252
1971 - 1,538
1972 - 1,697
1973 - 1,996
1974 - 2,071
1975 - 2,198
1976 - 2,206
1977 - 2,518
1978 - 2,538
1979 - 2,514
1980 - 2,480

Source: The Medico-Social Research Board

FIGURE 5

FIRST ADMISSIONS TO IRISH PSYCHIATRIC HOSPITALS FOR ALCOHOLISM



Source: The Medico-Social Research Board

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TRENDS IN PUBLIC HEALTH AND PUBLIC ORDER CONSEQUENCES OF ALCOHOL CONSUMPTION IN ONTARIO 1950-1980

by

Norman Giesbrecht and Diane McKenzie*

INTRODUCTION

Ontario has experienced remarkable changes in the perception, availability and use of alcohol beverages over the last three decades. Behaviour which used to be perceived by the influential minority as inappropriate has given way to commonplace consumption. Once alcohol was dispensed in unattractive beer-halls or from behind austere counters and now it is available in a greater variety of settings and openly displayed in well-stocked shelves. Thirty years ago a special occasion may have included drinking. Today the promotional messages imply that alcohol is appropriate for most every setting and the occasion is not "special" unless alcohol is present.

These changes are complimentary and have occurred concurrently rather than in sequence. For example, the expansion and diversification of the network of outlets including large-scale conversion to self-service liquor stores facilitated the elaboration of brands and beverage choices. And the long-term trend in declining real price of alcohol encourages increased volume and variety of purchases.

In other words, alcohol is sold in more outlets, available in a greater variety of beverages, presented in more settings, and, relative to average income or the cost of other goods and services, cheaper than it was some years ago. To a large extent these changes explain why alcohol consumption has increased substantially in Ontario over the past three decades. The volume of official sales in litres of absolute alcohol has increased by over 200% or an average of about 1.5% per year. The actual rate of consumption has climbed from 7.3 litres** in 1950 to the 1980 level of about 11.6 (Single *et al.*, 1981b).

This overall increase of almost 60% has accumulated via steady, incremental, annual changes in the rate of drinking, rather than dramatic changes; and increased access has occurred in piecemeal, regular and small steps. In the course of these changes, drinking patterns have evolved where regular consumption of moderate amounts has become more common and likely added to the pattern of periodic indulgence in excessive amounts of alcohol. The preferred beverage is beer; however, the proportion of the alcoholic beverage market for beer has declined since 1950, giving way to spirits and wine. In 1950, the proportion of beer consumed was 65.6% and by 1974 it had declined to 51%. During the same period, the proportion of spirits consumed rose from 27.6% to 39% and wine increased from 6.8% to 10% (Single and Giesbrecht, 1979).

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* Addiction Research Foundation, 33 Russell St., Toronto, Canada, M5S 2S1. This paper is based on the ARF contribution to the ISACE project (Mäkelä *et al.*; 1981, Single *et al.*; 1981a) and is a revised version of Giesbrecht and McKenzie (1980). The authors gratefully acknowledge comments by Jacek Moskalewicz, Wolfgang Schmidt and Eric Single on a draft of this paper.

** Consumption rates are in litres of absolute alcohol per persons aged 15 and older.

A major change in the drinking behaviour of the Ontario population has been the privatization of drinking. Although the rate of on-premise outlets (i.e., restaurants, bars, etc.) has increased more dramatically than the off-premise outlet rates, there has been a steady shift from on-premise consumption to private consumption. This pattern is stronger for beer sales than for spirits and wine. Since curtailing the negative consequences of drinking may be more difficult in private than in public settings, one implication is that regulatory and control efforts may have limited impact for a large portion of drinking occasions (see, Gilbert, 1979; Brook *et al.*, 1981; Single *et al.*, 1981b).

This paper focusses on the so-called "negative" consequences of alcohol consumption examined via trend data on public health and public order statistics. The purpose is to analyze aggregate official statistics on consequences and comment on policies influencing the control or management of alcohol problems in Ontario. There is considerable variation in the range and validity of available data. Availability and quality of the data are influenced by the priorities of policy makers and bureaucrats, law enforcers, treatment personnel, educators and researchers. Definitions of inappropriate alcohol-related behaviors, financial constraints, and technological and scientific developments (e.g., measuring blood alcohol levels) affect the type and volume of "alcohol-related" problems reported in a jurisdiction (see Mäkelä *et al.*, 1981).

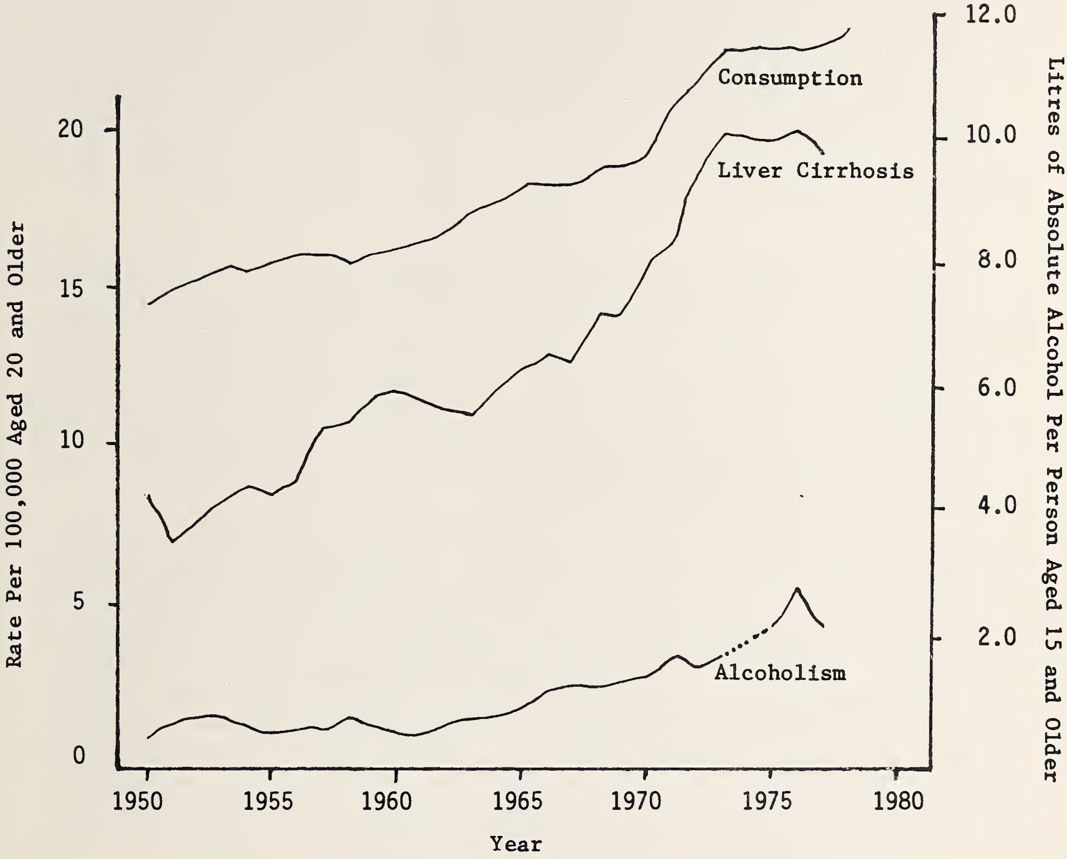
MORTALITY

Liver cirrhosis mortality per 100,000 persons aged 20 and older has increased nearly 150% since 1950 (7.9 to 19.4) and this increase can be attributed primarily to increasing levels of alcohol consumption in the population. Schmidt (1977) estimates that the proportion of cirrhotic deaths due to heavy drinking was 58-72% in 1965 and increased to 79-81% by 1974. The late fifties, late sixties and early seventies showed particularly elevated rates with annual averages in excess of 7.9%. Some levelling off has occurred since 1973. (Figure 1).

Changes in the male-female ratio indicate that this cause of death has been more rapid for men than women, particularly in the early fifties and then again since the mid-sixties. Centered three-year averages indicate ratios ranging from 1.50:1 to 1.81:1 between 1950 and 1955, and from 1.83:1 to 2.23:1 between 1965 and 1975. Recent speculations that female rates of alcohol problems are approaching those for males are not supported by liver cirrhosis mortality data (Ferrence, 1980).

FIGURE 1

LIVER CIRRHOSIS AND ALCOHOLISM MORTALITY RATES AND PER ADULT ALCOHOL CONSUMPTION, ONTARIO, 1950-1977*



* Data presented in these figures are based on un-averaged rates.

"Alcoholism" mortality levels are congruent with the liver cirrhosis mortality data especially among middle-aged males. The overall change of almost 350% in "alcoholism" mortality over 25 years is evident, with the greatest increase between 1960 and 1974, and some fluctuations between 1970-1977 (Table 1, column 4). However, interpretations of these trends must be made with caution since the definition and usage of "alcoholism" in classifying deaths is much more likely to be influenced by extranious and arbitrary influences than is the case for liver cirrhosis. The diagnoses of "alcoholism" is often a catch-all category for deaths involving compounding alcohol-related ailments. Schmidt and de Lint (1972) state that for some classifications of death due to "alcoholism" the blood alcohol concentrations reported were below lethal levels and contributing causes such as pneumonia, coronary thrombosis, and so on are listed. They conclude that "as a diagnosis of cause of death, alcoholism is not a very meaningful term" and "that the ascription of death to alcoholism or to another disease is often arbitrary" (Schmidt and de Lint, 1972: 178).

For most years the male-female alcoholism ratio is between three and four to one which is higher than the ratio for cirrhosis deaths. Wide fluctuations ranging from 2.0:1 to 7.6:1 between 1965 and 1967 provides additional support for claims that consistency and accuracy in recording practices is is a particular problem for this cause of death. Age-specific data for this series can only be extrapolated from neurosis mortality. Since approximately 80% of neurosis deaths are classified as due to "alcoholism",* substantial changes in the rate may be attributed directly to the "alcoholism" proportion. Between 1950 and 1975 the rate for males aged 40 to 59 increased from 2.9 to 11.3, and from 2.2 to 15.9 per 100,000 from males aged 60 and older.

Several indicators, related to alcohol use, which are rarely reported in Ontario diagnoses include alcoholic psychosis, alcohol-related accidents, alcohol and drugs and suicide. Between 1965 and 1976 the absolute number of alcoholic psychosis deaths increased from 8 to 16. Similarly, only a handful of accidental deaths are specifically classified as due to alcohol. In the late 1960s a category "alcohol in combination with other drugs" was introduced into the accidental death classification; between 60 to 90 cases were reported per year. Suicide rates that are directly attributed to alcohol use are difficult to estimate since they are likely to fluctuate with secular changes. Based on Jellinek's formula (1947), Schmidt and de Lint (1970) suggest that 25% of the cases are related to heavy drinking. Over the past three decades the rate of suicide among adults (aged 20 and older) has increased by 46% (see Table 1).

To summarize, two causes of death where heavy alcohol consumption is a key factor in the majority of cases--namely, liver cirrhosis, alcoholism--have substantially increased, particularly among middle-aged males. These trends correspond with the age-sex profile of hospitalized alcoholics (see de Lint and Schmidt, 1976). In short, the data indicate that chronic health problems have increased dramatically, particularly affecting those sectors of the population which correspond in age to clinical populations (Schmidt, 1977).

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* "Alcoholism" is the most common cause of death among cases classified as due to "psychoneuroses and mental deficiencies" ranging from 75.0% to 87.5% of the total. Data for 1950-64 are estimates based on the alcoholism proportion of subsequent years (mean = 80.96%).

TABLE 1
SELECTED ALCOHOL-RELATED MORTALITY AND MORBIDITY RATES, ONTARIO 1950-1977[a]

			Mortality[d]			Morbidity[d]	
	Alcohol Consumption Per Adult[b]	Estimated Prevalence of Alcoholism[c]	Liver Cirrhosis	Alcoholism	Suicide	Alcoholism (First Admissions)[e]	Alcoholic Psychosis
Year	1	2	3	4	5	6	7
1950	7.32	1,470	7.9	1.00	13.1	2.4	3.2
-							
-							
-							
-							
1955	7.91	1,722	8.6	1.05	12.4	10.4	4.7
-							
-							
-							
-							
1960	8.24	2,230	11.6	0.98	13.4	19.9	6.0
-							
-							
-							
-							
1965	9.18	2,355	12.3	1.88	14.8	33.6	6.4
-							
-							
-							
-							
1970	9.92	2,918	15.6	2.76	20.2	54.7	6.5
-							
-							
-		3,580					
-							
1975	11.38		19.6	4.69	19.2	75.7	5.6
1976	11.42		19.4	4.90	19.1		
1977	11.47						
Overall Change	+57%	+144%	+146%	+335%	+46%	+3054%	+75%
Annual Average	+2.1%	+6.3%	+5.6%	+13.6%	+1.8%	+122.2%	+3.0%

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a All rates represent a centered three-year average and therefore take into account data for 1978.

b In litres of absolute alcohol.

c Estimated prevalence per 100,000 persons aged 15 and older based on liver cirrhosis mortality.

d Rate per 100,000 population aged 20 and older.

e First admissions to in-patient psychiatric facilities.

f Data for 1973.

Sources: ARF Annual Reports; Government of Ontario, Vital Statistics; Liquor Control Board of Ontario Annual Reports; Ministry of Health, Ontario, unpublished statistics; Single and Giesbrecht, 1979; Statistics Canada, Causes of Death, Mental Health Statistics.

The direct relationship between liver cirrhosis mortality and the extent of urbanism noted in the North American data by de Lint and Schmidt (1971) is no longer as strong as was once the case. Both in Ontario (Schmidt, 1977) and in Canada generally (Bosavarajappa and Lindsay, 1976) the rural-urban differences in liver cirrhosis rates are no longer as disparate as they were in the early sixties. The geographic shift in elevated alcohol-related problems which has occurred in Ontario is likely related to the proliferation of liquor outlets in rural Ontario, economic development, as well as other factors. It is exemplified in the exceptionally high rates of alcohol-related problems in the predominantly small-town and rural areas of northern Ontario (Giesbrecht *et al.*, 1977; Rush *et al.*, 1982). This region has the highest per adult consumption rate of 11 regions of the province in the mid-1970s (Single and Giesbrecht, 1978), and also has above average estimated alcoholism prevalence (Single, 1979; Rush *et al.*, 1982). Furthermore, mortality from alcohol-related accidental and violent causes is extremely high in the northern population, particularly for Native Indians (Giesbrecht *et al.*, 1977).

PREVALENCE OF ALCOHOLISM

Over the past three decades there has been a substantial increase in the *estimated* number of alcoholics in Ontario: figures based on liver cirrhosis mortality (Jellinek, 1959; Popham, 1970) indicate a 147% increase in the rate over 26 years. The rate was 1,470 in 1950, and had climbed to 3,580 by 1973. By 1976, it reached 3,930 (Rush *et al.*, 1982). The change was gradual; however, during the years 1966-1973 the annual average rose substantially (from 4.0% to 6.5%). The dramatic 1970-1973 rise of 22.7% was largely responsible for this change (Table 1, column 2).

The increased alcoholism prevalence is also indicated in a comparision of work by Schmidt and de Lint (1970) based on 1966 data, and subsequent updating by Single (1980) using 1973 data and by Rush *et al.*, (1982) with 1976 data. Four methods of estimating alcoholism were used in each case: three involved calculations based on mortality statistics (liver cirrhosis, alcoholism, suicide)* and one using consumption data. According to these figures, the estimated prevalence per 100,000 adults increased from a mean rate of 2,670 in 1966 to 3,930 by 1976.

The greatest consistency between the prevalence estimate and rate of alcohol consumption is evident in the late 1960s to early 1970s (Table 1). As has been noted elsewhere, these years involved considerable liberalization of alcohol control measures in the province, including a somewhat steeper decline in the real price of alcoholic beverages (see Holmes, 1976), the lowering of the legal drinking age, expansion of the network of both off-premise and on-premise outlets, including the introduction of self-service government liquor stores and other changes which made alcohol more accessible (de Lint and Schmidt, 1974; Brook *et al.*, 1981; Schankula *et al.*, 1981).

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*Based on formulas developed by Jellinek (1947) and revised by Popham (1970).

MORBIDITY

Although certain diseases are more common among alcoholics or heavy drinkers than is the case for the general population, there are few diagnostic categories which specifically implicate alcohol consumption. Both 'alcoholism' and 'alcoholic psychosis' first admissions have increased substantially since the early 1950s (Figure 2), particularly the former--from 2.4 to 75.7 per 100,000 adults over 25 years. However, the reliability of the data has been questioned. Schmidt and Smart's (1959) assessment indicates an increase of 482% in number of non-psychotic alcoholics admitted to mental institutions in Ontario between 1948 and 1955. They discovered that 444% of this increase was largely due to the addition of 13 institutions to the reporting system over seven years and primarily involved admissions by three of the 13 institutions. Changes in reporting format, length of stay, readmission rates and the reduction in the duration of hospitalization for alcoholism must be considered (see Popham, 1956) before "any factor is assigned chief responsibility for a trend of this sort" (Schmidt and Smart, 1959: 435).

The statistics for alcoholism and alcoholic psychosis first admissions do not support speculations that heavy consumption among women has increased more rapidly than among men For alcoholism the ratio fluctuates between 3.8:1 and 7.3:1 and for alcoholic psychosis peaked at 5.4:1 around 1960. Several sex-related patterns emerged between 1950 and 1975: a decline for male alcoholic psychosis admissions (3.9% to 1.8) a decline for female psychosis admissions (1.3% to 0.5%), a very large increase in male alcoholism admissions (3.3% to 24.1%) and an increase in female alcoholism admissions (0.5% to 5.0%). On balance, male admissions for alcoholism have been primarily responsible for the rapid rise in the proportion of alcohol-related cases in mental institutions

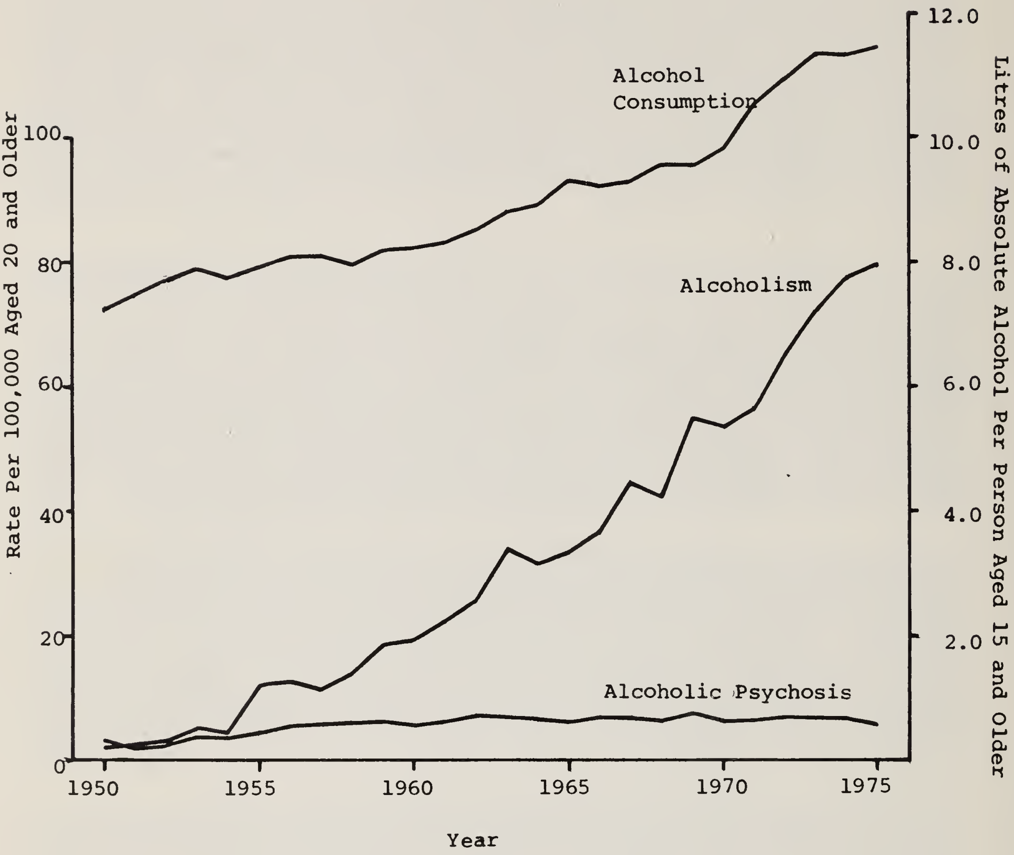
Of the four diagnoses considered from the hospital discharge data (see Giesbrecht and McKenzie, 1980: Table 1), 'alcoholism' had the highest rate increase followed by accidental poisoning, cirrhosis of the liver and alcoholic psychosis. The rates of these four diagnoses have either declined or leveled off during the mid-seventies generally paralleling consumption rates during this period (Figure 3). Although the data probably reflect causally related phenomena, explanations such as coincidental changes in diagnostic practices or a decline in the utilization of hospital services in conjunction with economic recessions must be considered

An age-specific shift toward patients in the middle to older age categories is apparent. The most dramatic change (+46%) is for liver cirrhosis diagnosis in the 45-59 age group, followed by alcoholic psychosis (+37%) and alcoholism (+16%) among those aged 60 and older. Conversely, declines were evident in the proportion of cases aged 25-44, particularly for diagnoses of liver cirrhosis (-11%) and alcoholic psychosis (-23%).

The rather substantial increases in certain morbidity series are generally in line with the mortality data. Between 1965 and 1977 the death rate for liver cirrhosis increased 58% and the hospital discharge rate by 83%. The percentage change for alcoholism rates was 160% for deaths, 125% for first admissions and 120% for discharges (Giesbrecht and McKenzie 1980: Table 1). From the gross comparability of these figures, one might conclude that there was some

FIGURE 2

ALCOHOLISM AND ALCOHOLIC PSYCHOSIS FIRST ADMISSION* RATES AND PER ADULT ALCOHOL CONSUMPTION, ONTARIO, 1950-1975

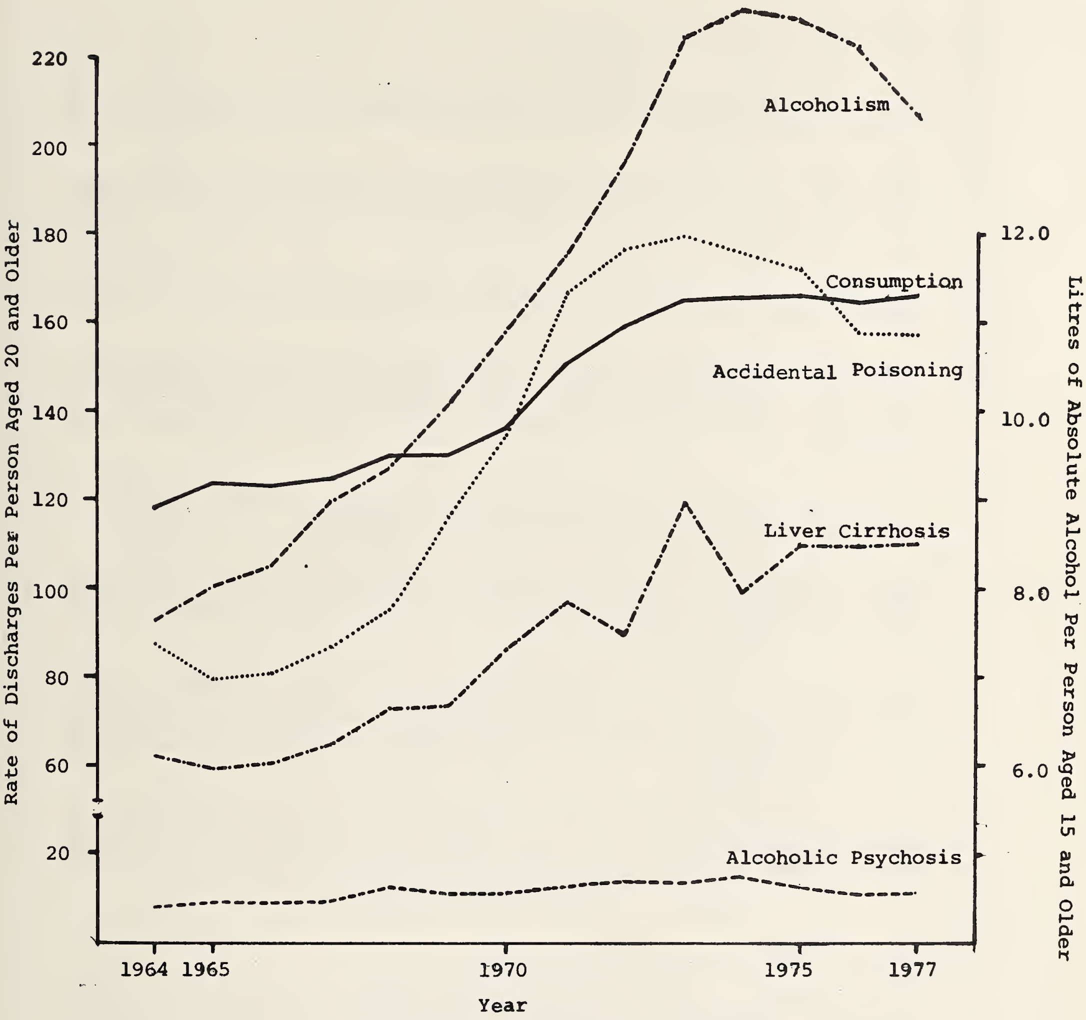


* First admission to in-patient psychiatric facilities

Source: See Table 1.

FIGURE 3

ALCOHOL-RELATED HOSPITAL DISCHARGE RATES AND PER ADULT ALCOHOL CONSUMPTION, ONTARIO, 1964-1977



Source: See Giesbrecht and McKenzie, 1980: Table 1.

general stability in the procedure for diagnosis of 'alcoholism' during this timeframe. However, the assumed stability may be partly due to non-random influences which lead to vague and inappropriate diagnostic criteria for all three "alcoholism" series (see Schmidt and de Lint, 1972).

PUBLIC HEALTH TRENDS - SUMMARY

From the mortality and morbidity data summarized above the following general conclusions emerge:

(1) The rates of alcohol-related damage have increased for each series, although certain mortality and hospital discharges data indicate a levelling off or slight decline since the mid-seventies.

(2) In general, the increases for the most reliable indicators are in keeping with the overall trend in the rate of consumption.

(3) 'Alcoholism' rates for both first admissions to psychiatric facilities and discharges from all hospitals have increased tremendously and the increases are probably influenced by reporting procedures and inconsistencies.

(4) The increase in the rate of liver cirrhosis discharges between 1965-1975 is in line with the rising rate of liver cirrhosis mortality.

(5) Male-female ratios indicate divergent trends, depending on the series compared. In general, the view that sex differences are narrowing is not supported by these statistics.

(6) Age-specific data for hospital discharges and liver cirrhosis mortality generally show an increase in the middle-aged and older groups (especially males) who are most likely to be susceptible to health consequences of heavy consumption.

(7) Rural-urban differences in certain alcohol-related causes of death (such as liver cirrhosis) appear to be on the decline and northern areas of Ontario have elevated rates for most indicators of alcohol-related problems.

ALCOHOL AND ROAD ACCIDENTS

Alcohol-related traffic problems are examined on the basis of two sources of information: road accidents involving alcohol and convictions for alcohol-related drinking and driving offences. There are two dimensions of alcohol-related accidents: the seriousness of the accident (fatal, personal injury, property damage) and the involvement of alcohol (impaired, had been drinking, no alcohol noted).

The trend data depicted in Table 2 indicate a tremendous increase in the proportion of fatal accidents where the driver was judged impaired. The sharpest increase in the proportion of fatal accidents involving impaired drivers occurred from 1965 (2.9%) to 1970 (12.1%), particularly between 1966 and 1968 (Figure 4). These changes preceded the 1969 change in legislation which

TABLE 2
ALCOHOL-RELATED ROAD ACCIDENTS AND CONVICTIONS FOR ALCOHOL-RELATED OFFENCES, ONTARIO, 1950-1977[a]

	Type of Road Accident and the Condition of The Driver						Convictions for Alcohol-Related Offences[c]	
Year	Impaired 1	Fatal[b] Had Been Drinking 2	N Fatal 3	Impaired 4	All Accidents[b] Had Been Drinking 5	N All Accidents 6	Drinking and Driving 7	Public Drunkeness and Other L.C.A. 8
1950							5.7	155.6
-								
-								
-								
-								
1955							20.5	158.1
-								
-								
-	2.6%	12.5%	(1,327)	2.3%	5.2%	(129,888)		
-								
1960	2.6	13.9	(1,379)	2.2	5.5	(149,415)	24.4	170.5
-								
-								
-								
-								
1965	2.9	13.5	(1,931)	1.8	6.1	(218,391)	24.9	208.8
-								
-								
-								
-								
1970	12.1	12.4	(1,908)	2.7	5.5	(241,403)	39.9	203.2
-							50.1	182.7
-							55.8	159.5
-								
-								
1975	13.7	13.0	(2,281)	2.7	6.0	(351,148)		
1976	14.6	12.3	(1,949)	2.8	5.7	(349,652)		
1977	15.6	12.5	(1,840)	2.8	5.6	(376,921)		
Overall Change	+600%	-	+139%	+122%	+107%	+290%	+979%	+102%
Annual Average	+31.6%	-	+7.3%	+6.4%	+5.7%	+15.3%	+44.5%	+4.7%

(a) All rates and proportions represent a centered three-year average.

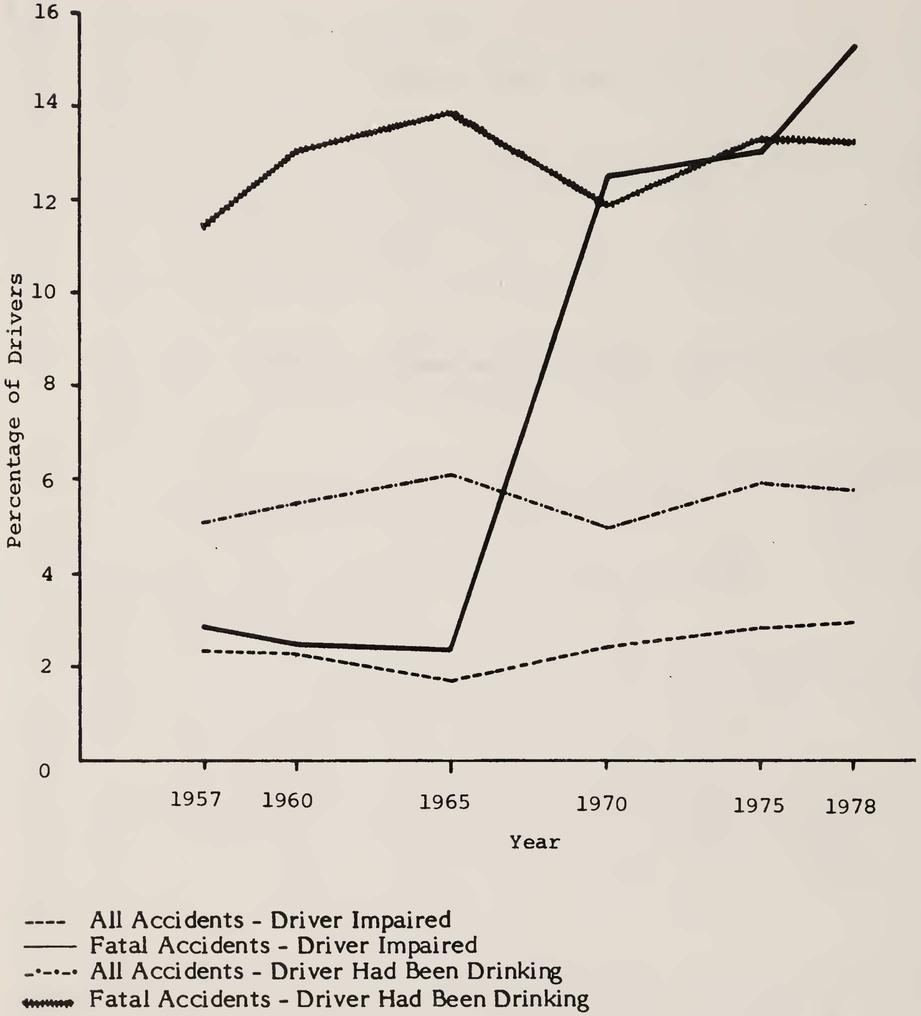
(b) The percentages refer to the proportion of drivers classified as either "impaired" or "had been drinking". Classifications are based on police reports and in some cases on coroner's findings.

(c) Rate of convictions per 10,000 persons aged 15 and older.

Sources: Ministry of Transportation and Communication, Ontario Motor Vehicle Accident Facts; and Statistics Canada, Motor Vehicle Traffic Accidents, Criminal and Other Offences.

FIGURE 4

PROPORTION OF ALCOHOL-RELATED ROAD ACCIDENTS, ONTARIO, 1957-1978



Source: See Table 2.

expanded the criteria for drinking and driving offences, the widescale application of breathalizer equipment in the early 1970s, and the lowering of the legal drinking age from 21 to 18 in 1971. During this period the proportion of all types of accidents involving non-impaired drivers who had been drinking was decreasing. The increasing fatalities involving impaired drivers appear to be independent of legal changes in control, the use of detection equipment, and the greater legal availability of alcohol to young drivers. At least two factors are considered relevant to the increase: the climb in the rate of consumption and the reduction in the overall rate of accidents which enhanced the visibility of drinking driving accidents (see Mäkelä *et al.*, 1981).

Convictions for alcohol-related driving offenders are the second source of information about changes in the prevalence of alcohol-related traffic problems. The conviction rate went from 5.7 in 1950 to 56.0 per 100,000 persons aged 15 and older in 1973. The greatest proportionate increase took place in the early fifties while the greatest absolute increase occurred between 1970 and 1972. Several legislative changes contributed to the 1970-72 increases. The year following the 1969 expansion of drinking and driving offence categories (1970), the conviction rate increased by 53%. Also, in the first full year after the lowering of the legal drinking age from 21 to 18 in September, 1971, there was a 20% increase in the rate (Figure 5).

An interesting component of the overall change in convictions for drinking and driving is that the proportion of 'indictable' (or more serious) offences has decreased dramatically and the 'summary proceeding' offences increased. In 1950 only 37.0% of the total convictions were by way of summary proceedings, by 1955 the proportion was 70%, and 99% by 1960 and thereafter. It appears that stronger controls with regard to drinking and driving (i.e., new laws, sophisticated equipment to measure impairment, higher conviction rates) was accompanied by a decline in the use of charges and proceedings that have more punitive minimum sentences and the option for more stringent maximum sentences.

LIQUOR ACT OFFENCES

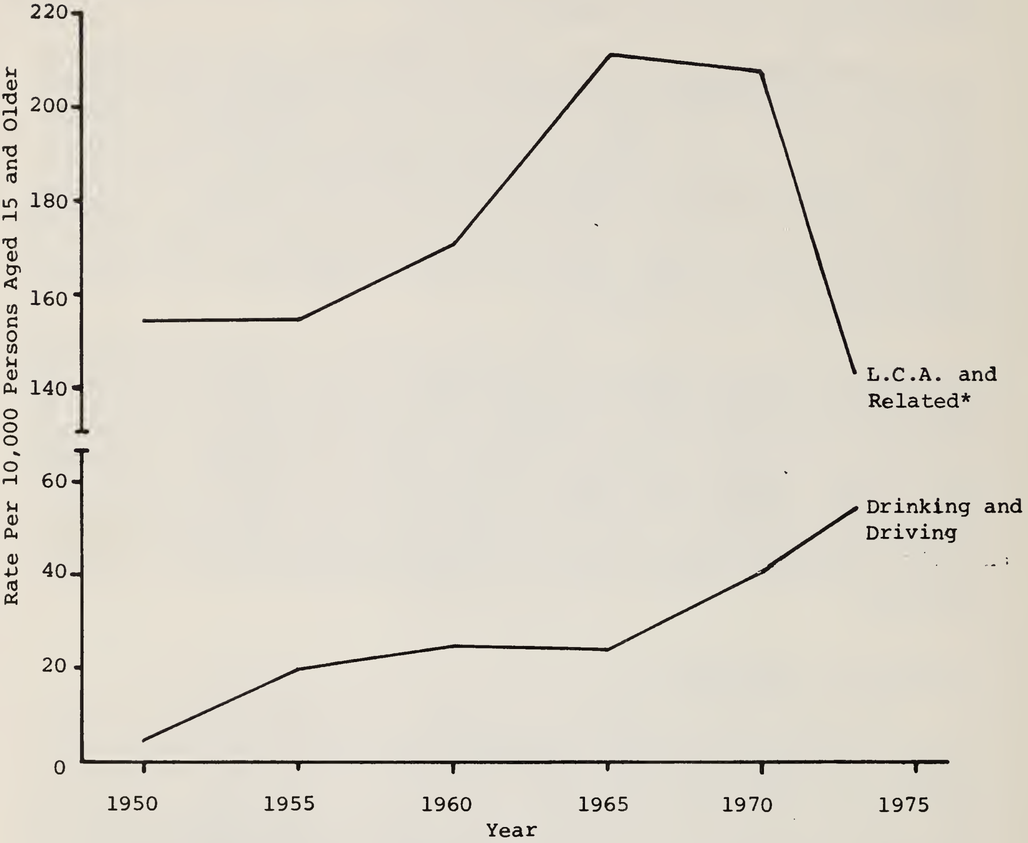
Two main trends are evident with regard to public drunkenness and other Liquor Act Offences (combined). The first is the rise in the conviction rate, followed by a steep decline after 1969. The rate of 155.6 in 1950 rose to above 210.0 by the mid-sixties. The transition period of the late-sixties was followed by a sharp decline to a rate of 147.2 by 1973. The second trend is the declining proportion of offences involving public drunkenness. Between 1950 and 1967 the "public drunkenness" proportion of LCA offences declined from 68.7% to 54.6%.

These changes were likely influenced by the partial decriminalization of public drunkenness in Ontario, which was initiated during the late sixties (e.g., Giffen *et al.*, 1969). The subsequent establishment of detoxication and halfway house facilities in numerous locales in Ontario (e.g., Annis *et al.*, 1976; Ogborne et al., 1978) was also relevant to a declining utilization of coercive measures to deal with public drunkenness in the province.

In addition, with the expansion of the on-premise network of liquor outlets in Ontario, and changes in regulations accompanying expansion and elaboration, it appears that a greater proportion of Liquor Act applications involved illegal

FIGURE 5

DRINKING AND DRIVING AND L.C.A. CONVICTION RATES, ONTARIO, 1950-1973



* Related refers to causing a disturbance by being drunk, Indian Act - intoxication, and Municipal by-laws - intoxication.

Source: See Table 2.

distribution, sale or consumption, and a declining majority the effects, namely drunkenness.

Two divergent trends are evident in the use of the law to curtail alcohol-related problems. The decline in "public order" convictions in the late sixties was accompanied by an increase in drinking and driving convictions about the same time. As has been noted elsewhere (Mäkelä *et al.*, 1981: Chapter III) these changes are likely a reflection of drinking problems becoming "less strictly confined to social outcasts and visibly deviant subgroups". The normalization of alcohol problems and legitimation of a wider range of target groups was facilitated by de-criminalization of public drunkenness and efforts by the alcoholism movement to make alcohol a legitimate social concern for conventional and conservative interest groups.

DISCUSSION

Several public health and public order consequences of alcohol consumption are considered in this report. Over the last three decades the rates of alcohol-related deaths and illness have increased substantially, as is particularly evident in liver cirrhosis and alcoholism mortality and morbidity data. The statistical series of liver cirrhosis is considered a better indicator of public health consequences of heavy drinking since it is less likely to be susceptible to diagnostic inconsistancies. The tremendous increase in alcoholism cases in Ontario--as evidenced by first admissions to psychiatric facilities, discharges from all hosptials and death rates--may be influenced by a growing awareness in the medical community of alcohol problems, or by the expansion of the network of reporting hospitals or special units dealing with patients so diagnosed.

However the impact of increasing levels of aggregate consumption cannot be ruled out. Alcoholism morbidity and mortality rates underwent a particularly steep increase from the mid-sixties to mid-seventies. This was a period of rapid liberalization of availability of alcohol in Ontario and involved an upward trend in the aggregate consumption rate that was steeper than usual.

The most dramatic increases in the liver cirrhosis and alcoholism rates occurred among males in their forties and older. These trends are in line with the age-sex specific rates on liver cirrhosis mortality and clinical data on the progression of alcohol-related health problems. On balance there is no consistent evidence of a convergence of male-female rates in alcohol-related health consequences, as indicated by the mortality and morbidity statistics presented above.

Road accident statistics indicate sharp increases in the proportion of impaired drivers in fatal accidents in the mid-sixties. Concurrently, the rate of Liquor Act convictions involving primarily public drunkenness began to level off and then decline in the early seventies. The sequence of events suggests that special efforts and campaigns to curtail drinking and driving were in response to a rising proportion of fatal accidents involving impaired drivers. Special control efforts to reduce the public order consequences of heavy drinking have shifted over the past decade: from public drunkenness and concomitant public order offences, toward drinking and driving.

However, the less widely publicized and probably less melodramatic health consequences related to chronic consumption have also been on the increase. Nevertherless preventive control programs that are comparable in scope to those focusing on drinking and driving have not been mounted with regard to health consequences of chronic consumption

IMPLICATIONS FOR PREVENTION

Major responses to the increasing rates of alcohol-related damage and public disruptions have been three-fold: (1) coercive measures such as special detection and law enforcement procedures regarding drunken driving; (2) the expansion of treatment facilities and community programs particularly with regard to employed heavy consumers; and, (3) education and promotion of moderation, warning or health-oriented messages via mass media, school programs or other means. While each of these has its place, it has not been easy to substantiate claims of positive impact for each mode nor difficult to find critiques of their potency (see Vingilis *et al.*, 1979; Goodstadt, 1978; Smythe and Brook, 1981). Many of these programs are drinker-specific, focussing over the years on a changing and expanding collection of target groups (see McKenzie and Giesbrecht, 1982). Few are problem-specific (e.g., drinking and driving, acute consequences chronic social disruptions etc.) and none are oriented to primary prevention at the aggregate level.

Control measures have not been introduced despite the mounting evidence of the substantial and diverse consequences of heavy consumption in Ontario. Policy changes designed to control the availability of alcohol and maintain current consumption rates have been recommended (e.g., ARF, 1978) but not initiated at a general level. The recent levelling off or decline in the rates for several alcohol-related morbidity and mortality indicators is probably related to similar patterns in the aggregate rate of alcohol consumption. Although these developments in the mid- to late-seventies are welcomed from the public health perspective they cannot as yet be linked to any effective policy oriented to curtail disruption and damage through more effective regulation and control of alcohol consumption and inappropriate use.

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TRENDS IN ALCOHOL PROBLEMS IN CALIFORNIA 1950-1979

by

Tracy Cameron*

INTRODUCTION

California experienced dramatic changes in the availability and consumption of alcohol in the wake of U.S. Prohibition and Repeal in the first half of this century. Changes in the availability of alcohol and in general drinking practices have been far less dramatic since 1950. Alcohol has been generally available to the adult population in California throughout the period, although legally prohibited to persons less than 21 years of age. The total number of retail outlets in California licensed to sell alcoholic beverages has not kept pace with population growth during much of this period and, until very recently, declined on a per capita basis. However, the rate has begun to increase in recent years due primarily to the proliferation in the number of beer and wine licences (Mosher, 1979).

The proportion of off-premise alcoholic beverage retail licences has declined slightly during this period; 47% were off-premise in 1950 and 43% in 1978 (Mosher, 1979). There have been some indications of a large shift toward off-premise consumption on a national level (Kluge, 1971), but even these national trends are hard to document due to the lack of systematic data. Recent U.S. general popluation survey data (Clark, 1981) suggests that as a proportion of all alcoholic beverages consumed by U.S. drinkers in a "typical month," the proportion consumed off-premise (57%) was somewhat larger than the proportion consumed on-premise (42%). The former refers to "package" purchases for private consumption and the latter to public consumption in bars, restaurants, clubs, etc.

While alcoholic beverages have been readily available in California throughout the period since 1950, there has been a noticeable trend toward diversification in the types of retail outlets selling alcoholic beverages. Alcohol is now available in large supermarkets and in small neighbourhood grocery and convenience stores, in large beverage discount outlets, and in corner liquor stores. Thus, it may be said that even more than in past years, alcohol is an accepted part of everyday life in California.

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Despite its general acceptance, though, alcohol has been linked to one degree or another with several social and health problems in California during the past three decades. These range from problems like traffic accidents which may result from a single drinking occasion to long-term physiological problems like cirrhosis of the liver. For some alcohol-related problems, alcohol is referred to in the definition of the problem, as in the case of arrests for public drunkenness or driving under the influence of intoxicating liquor. But in others, the extent to which alcohol actually plays a part in the problem is open to study, as in the case of traffic accidents or violent crimes.

Alcohol-related problems also differ as to whether they are primarily problems of public health or problems of public order. In California in the post-war period, official statistics on alcohol-related problems suggest the problems of public order far outnumbered problems of public health. For example, in 1978, for every one death due to cirrhosis of the liver, there were 63 arrests for misdemeanour drunk driving and 49 arrests for public drunkenness compared with 10 injuries and 0.5 fatalities of drinking drivers in traffic accidents, and 0.1 deaths due to either alcoholism or alcoholic psychosis. In gross terms, this relative hierarchy among problems has remained largely unchanged throughout the past 30 years.

However, changes in alcohol consumption or alcohol problems during this period have neither been insignificant nor small. The last three decades in California have witnessed steady growth in the state's population, its industry, and its economy. During this period, consumption of alcoholic beverages has followed this upward trend, as have several, but not all, of the official indicators of alcohol problems in California (Figure 1)*. California's population in 1979 represents a 110% increase over the 1950 statewide population figure. In comparison, consumption of absolute alcohol from beer, wine, and distilled spirits combined has increased by twice that amount or 220% between 1950 and 1979. Some alcohol problems in California have increased by even larger amounts, with 1979 levels up to 600% greater than previous 1950 or 1960 levels.

Changes in the per capita rate of alcohol consumption is generally consistent with these trends over the three post-war decades. It is notable, however, that two of the alcohol problem indicators (arrests for public drunkenness and psychiatric hospital admissions diagnosed as alcoholics) are exceptions to this generally upward trend, and have actually decreased in both absolute numbers and on a per capita basis over the period. Relative to the increase in alcohol consumption during this period, mortality rates for cirrhosis, alcoholism, and alcoholic psychosis, as well as alcoholic hospital admissions and arrests for public drunkenness, have all declined somewhat, while arrests for drunk driving and the number of drinking drivers in traffic accidents have

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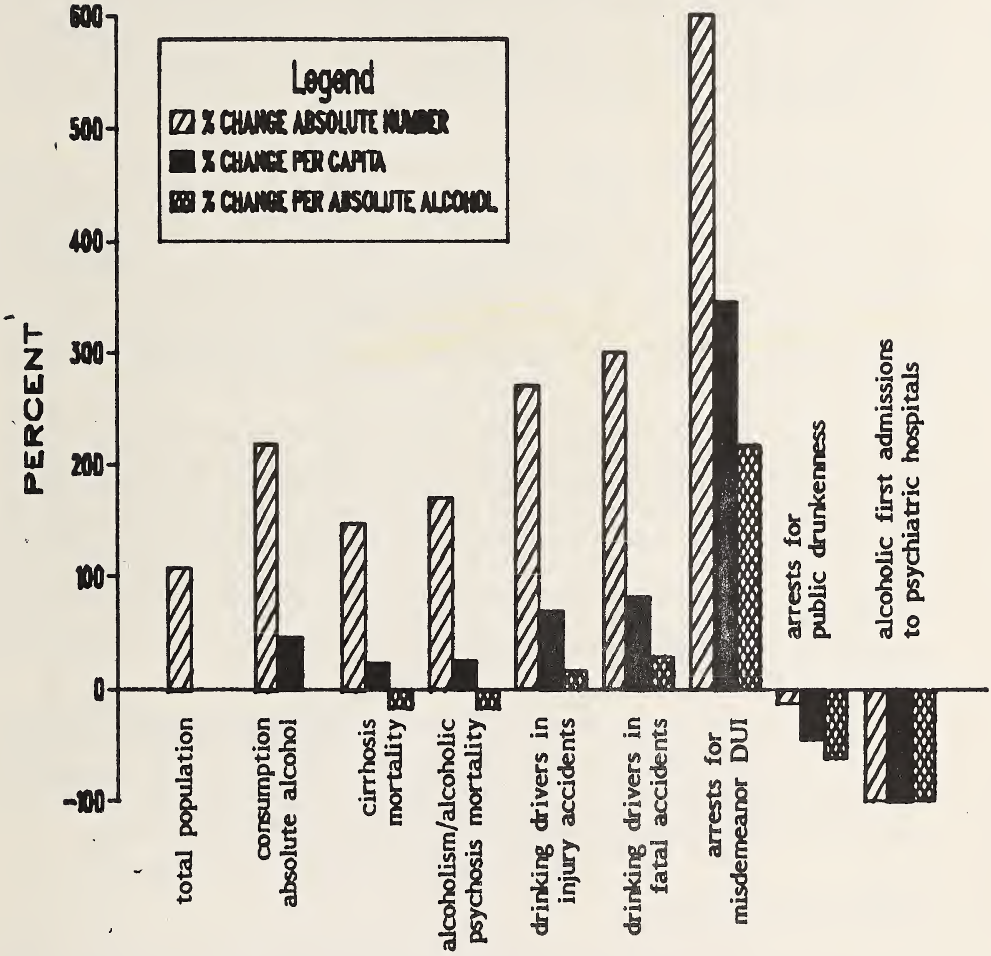
*In all the figures, the time period over which change in alcohol indicators has been calculated differs across indicators, due to availability of data. The time frame is 1950-1979 for population data, alcoholism and alcoholic psychosis mortality, drinking-drivers in traffic accidents, and alcoholic hospital admissions. The time frame for arrests for public drunkenness and DUI is 1960-1979, and for cirrhosis mortality is 1950-1978. Changes in per capita rates are based on the 15 and older population for alcohol consumption and drinking-drivers in traffic accidents. Otherwise, per capita rates are for the 20 and older population. Change per absolute alcohol is the same for all indicators and is based on rates per 10,000 litres of absolute alcohol.

FIGURE 1

CHANGES IN SELECTED ALCOHOL INDICATORS
CALIFORNIA, 1950-1979



increased (Figure 1). These trends provide a basis for the following more detailed discussion of the problems and policies surrounding alcohol consumption in California in the post-war period.

ALCOHOL CONSUMPTION

Shifts occurring in general drinking patterns since 1950 appear to reflect changing consumer tastes in alcohol beverage choice more than any fundamental changes in the population of drinkers in California. Opinion polls and survey data indicate that 80% (of adults 18 years and older) were drinkers in 1960 (Field Institute, 1960) and 82% in 1980 (Cameron, 1981). Most drinkers in California are light or moderate drinkers, heavy drinking being limited only to a minority (Cameron, 1981; Clark, 1978; Knupfer *et al.*, 1963).

In the aggregrate, Californians are drinking more now than in 1950. Alcoholic beverages sales data indicate a clear upward trend in alcohol consumption (Figure 2). Between 1950 and 1979, per adult consumption (aged 15+) increased from 8.89 to 12.99 litres of absolute alcohol. Trends in wine, beer, and distilled spirits all show 1979 consumption rates higher than those in 1950, although in the case of distilled spirits there has been a levelling off in per capita consumption in the early 1970s and a decline in the late 1970s. Wine and beer consumption have shown similar proportional increases during the period, but beer consumption outranked both wine and distilled spirits in 1979.

Across all three beverage types there has been a shift toward beverages with lower alcohol content, particularly in the last decade or so (Collins and Milkes, 1980). In distilled spirits this shift can be seen in the introduction of lower proof liquors. This reduction in alcohol content is partially responsible for the decrease in per capita consumption of absolute alcohol in the form of distilled spirits evident in Figure 2. For wine the shift toward beverages with lower alcohol content has been reflected in a drop in sales of fortified wines and an increase in sales of table wines. And for beer the shift is apparent in the introduction and popularity of light beers which are lower in both calories and alcohol content.

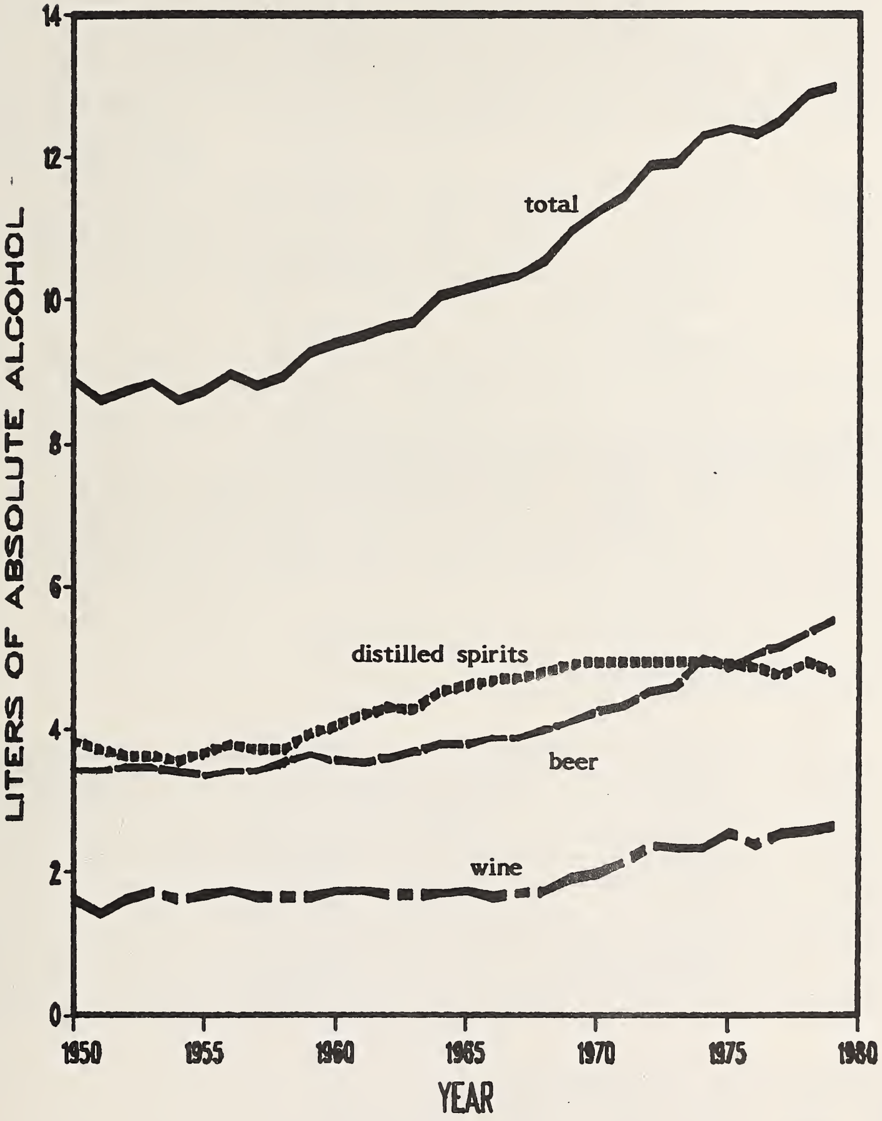
In addition to these changes in drinking habits, Californians also exhibited a move toward "white goods" (vodka, gin, rum, tequilla) rather than the traditional whiskeys (Collins and Milkes, 1980). Thus, the picture we have of California in the post-war period is one of a general increase in per capita consumption of alcoholic beverages and a change in consumer tastes in beverage choice.

CIRRHOSIS MORTALITY

Public health research has regarded cirrhosis of the liver as both an index and a consequence of heavy alcohol use (Bruun *et al.*, 1975). Cirrhosis mortality is one of the leading causes of death among heavy drinkers, and an integral part of alcoholism prevalence estimation formulas. The statistical correlation between per capita cirrhosis mortality and per capita alcohol consumption rates over time has been the focus of research and debate for several years (Ledermann, 1964; Schmidt and Popham, 1975). Although there are no statewide studies in California which quantify the proportion of cirrhosis deaths which are

FIGURE 2

PER CAPITA CONSUMPTION OF ALCOHOLIC BEVERAGES
BY THE 15 YEARS AND OLDER POPULATION
CALIFORNIA, 1950-1979



alcohol-related, the number is generally thought to be quite substantial. One careful study in San Francisco (Puffer and Griffith, 1967) placed the figure at 93.7%.

In California, cirrhosis of the liver was the primary cause of 1,714 deaths in 1950, accounting for 1.74% of total mortality in that year. By 1978 there were 4,346 deaths due to liver cirrhosis which accounted for 2.47% of total mortality. The number of deaths due to cirrohsis of the liver climbed steadily between 1950 and 1974 and then began a gradual decline. Per capita cirrhosis mortality rates for the population 20 years and older rose from 23.69 per 100,000 persons in 1950 to a high of 32.27 in 1966 and then declined to 29.01 in 1978 (Figure 3). As a result, the 1978 per capita cirrhosis mortality rate represents only a 22% increase over the corresponding 1950 rate.

Of particular interest is the recent downward trend in per capita cirrhosis mortality which diverges significantly from the upward trend in per capita alcohol consumption in the late 1970s. Trends in alcohol consumption and cirrhosis mortality both exhibited upward trends until the mid-1960s. While per capita alcohol consumption continued to increase, cirrhosis mortality fell off and continued to decline after 1966.

Throughout the 30-year period the ratio of male to female cirrhotic deaths increased: from 1.70:1 in 1950 to 1.73:1 in 1960, 1.88:1 in 1970, and 1.94:1 in 1978. Sex specific cirrhosis mortality rates reveal that the female cirrhosis mortality rate began its present downward trend in 1965, five years earlier than a similar downward trend in the male cirrhosis mortality rate (Figure 3). Thus, overall cirrhosis mortality has been declining in recent years, but female cirrhosis rates have been declining more sharply than male cirrhosis rates. As far as long-term health problems are concerned, these data do not support recent assertions that alcohol problems among women may be increasing rapidly and approaching those of men.

ALCOHOLISM AND ALCOHOLIC PSYCHOSIS MORTALITY

Alcoholism and alcoholic psychosis are used infrequently and apparently as residual categories on death certificates in California. It is likely that alcoholic psychosis is designated as a primary cause of death only when a psychiatric hospital patient admitted for alcoholic psychosis dies while in the hospital. Official records for 1950 indicate that there were only 16 deaths due to alcoholic psychosis and 238 deaths due to alcoholism. In 1979, these figures were 25 and 650, respectively. Per capita mortality rates based on the 20 and older population show that the alcoholism mortality rate in California declined throughout much of the past 30 years, but in recent years has shown an upward trend. Per capita alcoholic psychosis mortality appears to have reached its highest level during this period in the mid-1960s (Cameron, 1980; Collins, 1980).

THE ALCOHOL TREATMENT NETWORK

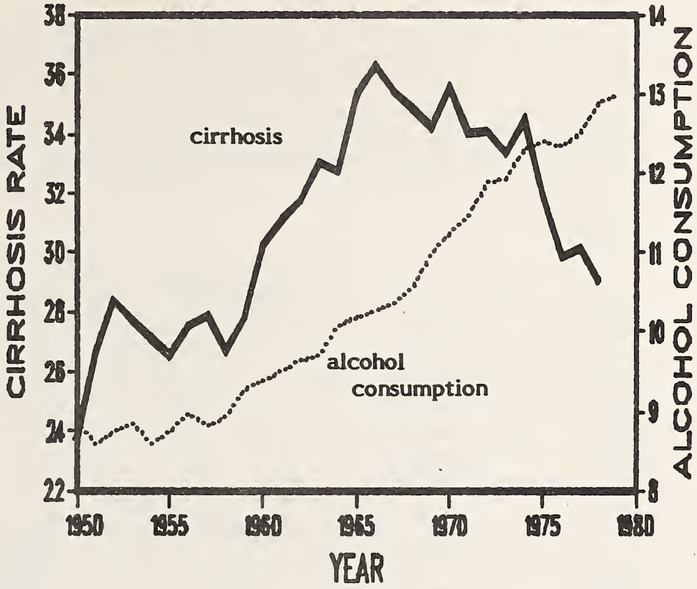
The network of alcohol treatment services in existence in California in the post-war period can be documented on only a piecemeal basis. Over the years, changing social policy and shifting institutional responsibility in the general area

FIGURE 3

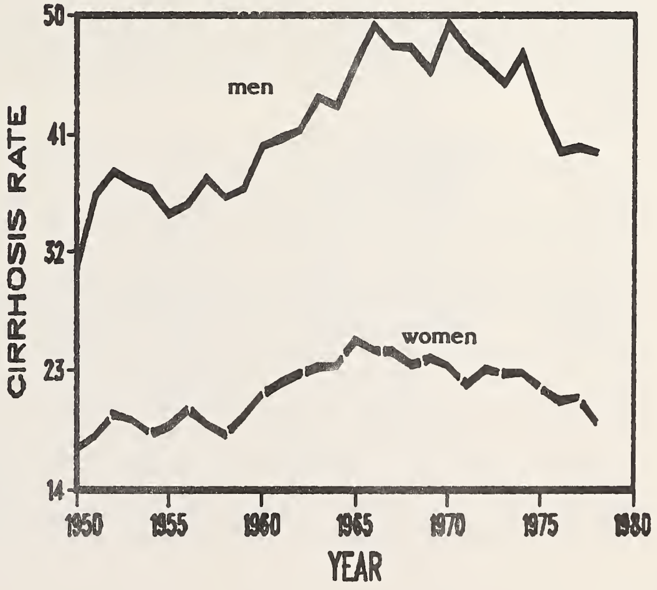
CIRRHOSIS MORTALITY
PER 100,000 OF THE 20 YEARS AND OLDER POPULATION
CALIFORNIA, 1950-1978

CIRRHOSIS AND ALCOHOL CONSUMPTION

(alcohol consumption per capita for 15 and older population)



CIRRHOSIS AMONG MEN AND WOMEN



of health care, as well as in the specific field of alcohol treatment has confounded systematic data collection on the number of individuals receiving services for alcohol problems in California. The nature and extent of alcohol problems in both county general hospitals and Veteran Administration hospitals is largely uncharted, despite the role of these institutions as major providers of alcohol problem services in past decades.

Of the many types of institutions involved in providing services for alcohol problems, only state psychiatric hospitals have kept systematic annual records of the number of individuals receiving treatment. Both involuntary alcoholic commitments and first admissions diagnosed as alcoholics in state psychiatric hospitals fell dramatically during the period since 1950 (Figure 4). First admissions diagnosed as alcoholics fell from 34.9 to 13.9 per 100,000 persons 20 and older, and involuntary alcoholic commitments fell from 37.3 to 0.4 between 1950 and 1972.

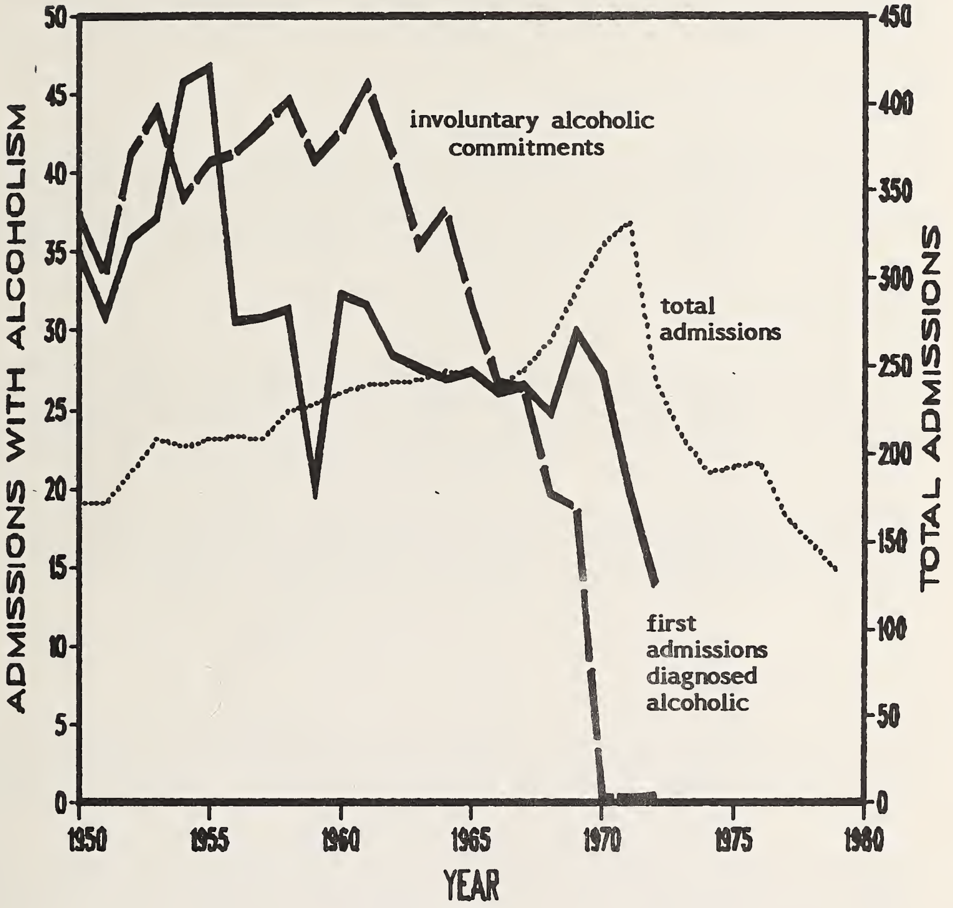
The dramatic decline in the number of individuals receiving treatment for alcohol problems in the state psychiatric hospitals was a direct result of broader changes in federal and state mental health care policy. The 1960s and 1970s were characterized by a general shift in mental health care policy away from large institutions and toward treatment in small facilities within the patient's community. Until 1972, the rate of total hospital admissions per 100,000 persons 20 and older was increasing, from 171 in 1950 to 333 in 1971. However, from 1972 on, the rate declined sharply to 132 per 100,000 persons 20 and older in 1979 (Figure 4).

Persons in need of treatment for alcohol problems were no longer routinely referred to the state psychiatric hospital system, but instead were referred to an array of community mental health centres and board-and-care facilities. California legislation during this period stiffened regulations surrounding all involuntary commitments to mental hospitals, including involuntary alcoholic commitments. By the early 1970s, the phasing out of alcohol treatment services in state psychiatric hospitals was so complete that information on involuntary alcoholic commitments was no longer collected and published by any state agency.

Unfortunately, the rise of smaller community-based alcohol treatment services can only be partially documented. Counties and cities, acting relatively autonomously under existing state laws, adopted a wide variety of institutional arrangements for handling alcohol problems on the local level. Consequently, the period since 1950 involved a substantial growth in both the number and type of available alcohol treatment services. The decade of the 1970s saw particularly dramatic growth in the number of programs with the large influx of available funds generated through the creation of the National Institute on Alcoholism and Alcohol Abuse in the federal government in 1970. By 1980, the list of alcohol treatment services included both medical and social setting detoxification facilities, drop-in centres, recovery homes and halfway houses, out-patient counselling services, referral and information services, occupational programs, vocational rehabilitation services, and special education and group therapy treatment services for drinking drivers. Many of these services are offered by both private and publicly-funded agencies (California Office of Alcohol Program Management, 1974a; Roizen and Weisner, 1979).

FIGURE 4

ADMISSIONS TO STATE PSYCHIATRIC HOSPITALS
PER 100,000 OF THE 20 YEARS AND OLDER POPULATION
CALIFORNIA, 1950-1979



Although the Office of Alcohol Program Management was created within the state government in 1970 with the express purpose of turning the existing array of fragmented and uncoordinated alcohol treatment programs into a comprehensive, integrated delivery system (California Office of Alcohol Program Management, 1974b), a comprehensive set of figures charting the number of treatment programs available on an annual basis or the number of annual admissions to these programs is not published routinely. Thus, the tasks of characterizing the changing nature of the alcohol treatment system and of documenting the annual number of admissions for treatment during this period become quite difficult. However, it is clear from the data available that the formal alcohol treatment system in California became increasingly large and diverse and could handle an increasing number of individuals with a variety of special problems.

ALCOHOL-RELATED ARRESTS

Alcohol-related arrests may encompass a wide range of offences under California law, from violation of the legal code prohibiting the sale of alcoholic beverages between the hours of 2 a.m. and 6 a.m. to soliciting money for purchase of alcoholic beverages to evasion of alcohol beverage excise taxes. However, in this paper alcohol-related arrests will include only two classes of violations -- public drunkenness and driving under the influence of intoxicating liquor (DUI).

Laws concerning both public drunkenness and drunk driving have undergone substantial changes during the past three decades, reflecting changing public sentiments toward these particular offences as well as broad movements in social policy in the criminal justice and health care arenas. Data on arrests for public drunkenness and DUI were not compiled for the state as a whole until 1960, due at least in part to the difficulty in collecting data from the hundreds of separate reporting agencies statewide. As with all arrest statistics, variation between jurisdictions and over time in enforcement and reporting policies and procedures must be considered when interpreting trends in alcohol-related arrest data.

Public Drunkenness

Public drunkenness arrests appear to have been at an historic high in many large California cities during the decade of the 1950s (California Department of Public Health, 1964), where they served as a weapon in programs of "urban renewal." Throughout the 1960s, California came under increasing political pressure from alcoholism lobbies and new federal policies favouring the decriminalization of public drunkenness. In 1972, California legislation was passed which gave local jurisdictions the legal option to commit public inebriates to civil detoxification facilities for 72 hours in lieu of bringing criminal charges (California Office of Alcohol Program Management, 1974b). Counties have been slow in opting for this program and many still routinely process public inebriates through the criminal justice system. As a result, there is tremendous variation in the number of arrests for public drunkenness from one county to another.

Adult public drunkenness arrests for the state have declined since 1960, from roughly 257,000 arrests to not quite 223,000 in 1979. The per capita arrest rate for the 20 and older population fell from 2,654 per 100,000 persons in 1960 to 1,451 in 1979 (Figure 5). Nevertheless, despite this dramatic downward trend for the state as a whole, some counties have actually witnessed increases in the per capita rate of public drunkenness arrests in recent years (Pina and Hoffman, 1980). These developments warrant close study in the future: they may signal a retreat from the policy of decriminalization or merely indicate a local reaction to specific social or political pressures in certain counties.

Driving Under the Influence (DUI)

In sharp contrast to the downward trend in arrests for public drunkenness, adult misdemeanour arrests for driving under the influence of intoxicating liquor have increased dramatically over the past two decades. In absolute numbers they have increased 600% from just under 39,000 in 1960 to over 273,000 in 1979. The per capita rate of arrests for the 20 and older population has increased more than fourfold, from 401 to 1,778 per 100,000 persons during this period (Figure 5). The number of arrests per vehicle mile driven has also increased substantially, from 55 arrests to 167 arrests per 100 million miles driven. The number of felony drunk driving arrests, while much smaller than the number of misdemeanour arrests, has also shown an increase from 2,613 arrests in 1968 to 5,306 in 1979 (Cameron, 1980; Collins, 1980).

In the early and mid-1960s, convictions for DUI kept pace with DUI arrests. However, convictions for DUI have lagged considerably behind the number of DUI arrests since the dramatic increase in arrests in the late 1960s (Figure 5). While the number of DUI convictions has increased substantially during this period, in 1979 there were 80,000 fewer convictions than arrests. It has been common practice under California law to plea bargain cases originally charged with DUI to the lesser charge of reckless driving.

Since the mid-1960s, drunk driving has become increasingly visible as a social problem, both in California and nationwide. The federal Highway Safety Act of 1966 and the 1968 report to Congress on *Alcohol and Highway Safety* from the Secretary of Transportation (U.S. Department of Transportation, 1968) placed a nationwide spotlight on the problem of drunk driving. Countermeasure programs aimed at reducing the problem of drunk driving proliferated over the next decade, the most extensive of which were the Alcohol Safety Action Programs. These programs attacked the problem of drunk driving through mass media education campaigns for the general public, through increased enforcement of DUI laws which resulted in increased arrests for DUI, and through special post-arrest education and rehabilitiation programs for drinking drivers.

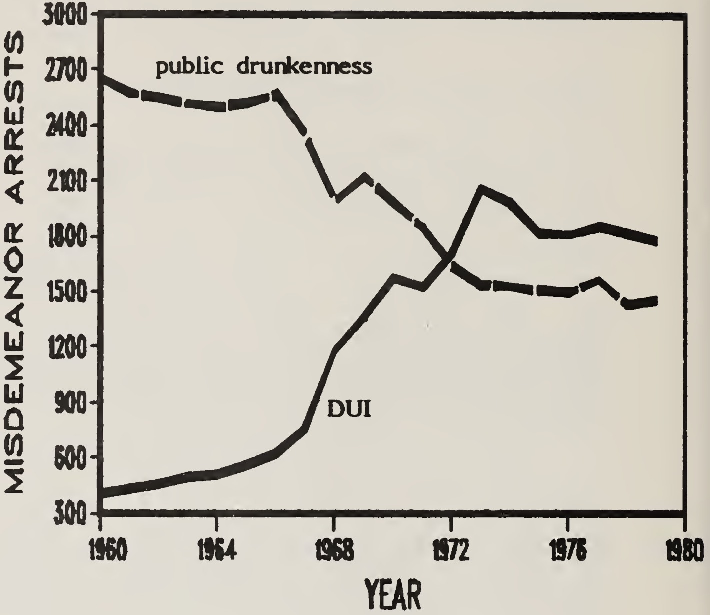
The new emphasis on education and rehabilitiation of the drinking driver was reflected in state legislation in 1975 and 1977 establishing rehabilitation programs as a sentencing alternative for repeat DUI offenders (Herman, 1979, 1980). However, a renewed current interest in the enforcement side of the drinking driver equation has been influenced by a California-born, nationally known grass roots movement made up of families of drunk-driving accident victims. The state legislature passed several "tough" new drunk driving laws which went into effect on January 1, 1982. These laws established a per se blood

FIGURE 5

PUBLIC DRUNKENNESS AND DRIVING UNDER THE INFLUENCE
CALIFORNIA, 1950-1979

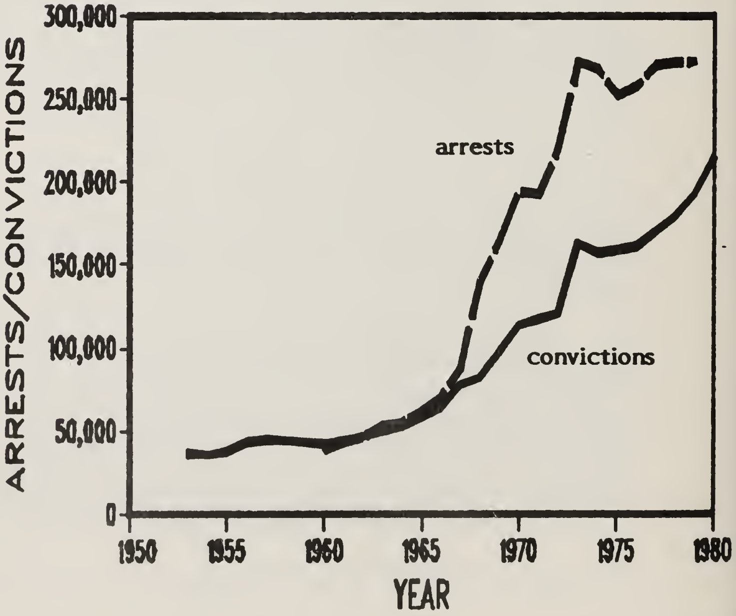
PUBLIC DRUNKENNESS AND DUI ARRESTS

(per 100,000 of the 20 and older population)



DUI ARRESTS AND CONVICTIONS

(actual number)



alcohol level of .10% for DUI (replacing a presumptive law)*, placed restrictions on the use of plea bargaining in DUI cases, and mandated minimum sentence requirements (including fines, jail sentences, licence restrictions, and education/rehabilitation programs) for both first and repeat DUI offences (California Department of Alcohol and Drug Programs, 1982). Future study is required to determine the effects of these new laws on the criminal justice system, on the general driving population, and on the problem of drinking and driving in California.

Comparison of Arrest Trends

A comparison of trends in public drunkenness and drunk driving arrests over the past two decades uncovers an interesting relationship. On the one hand, public drunkenness arrests accounted for 44.7% of all adult misdemeanour arrests in California in 1960, but only 23.7% of these arrests in 1979. On the other hand, DUI arrests accounted for only 7.0% of all adult misdemeanour arrests statewide in 1960, but increased to 29.1% of such arrests by 1979 (Cameron, 1980; Collins, 1980). Of particular interest, though, is the fact that together these arrests account for an almost identical proportion of all adult misdemeanour arrests in 1979 (52.8%) as in 1950 (51.7%). This pattern may be indicative of changing enforcement policies in a world of limited resources.

Of further interest is the degree of variation in these two alcohol-related offences from one county to another within California. As a proportion of all misdemeanour arrests in 1978, DUI arrests varied from a low of 6.5% to a high of 47.2% in the 10 largest counties in California. Public drunkenness arrests varied from a low of 10.2% to a high of 42.7% (Pina and Hoffman, 1980). These variations in county arrest statistics reaffirm the importance of considering social, political, and economic factors when interpreting trends in alcohol-problem indicators.

TRAFFIC ACCIDENTS

The number of registered vehicles and the number of miles driven in California increased almost fourfold between 1950 and 1979. This far exceeds the increase in the state's population in the past 30 years. Yet, because of improved vehicle and roadway safety measures and better emergency medical care, the death rate per mile driven declined by half during this period. This decline, in combination with the substantially increased number of miles driven each year, has resulted in motor-vehicle accidents accounting for almost the same proportion of total mortality in California in 1979 (2.9%) as in 1950 (3.4%). Nevertheless, the number of fatal accidents rose from 2,706 to 4,914 and the number of injury accidents rose from 62,800 to 210,557 during this period (Cameron, 1980; Collins, 1980).

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* A per se law makes it illegal for any driver to drive at or above the legal blood alcohol limit. A presumptive law allows a drinking driver to argue in court that due to individual tolerance he was not legally impaired despite a blood alcohol level at or above the legal presumptive limit.

The relationship between alcohol and traffic accidents has been the focus of considerable research in the U.S. and in many other countries, particularly since the mid-1960s. While the proportion of accidents that involve drinking drivers varies from study to study, the existence of a strong and persistent association between drinking and traffic accidents is well established, at least with regard to fatal accidents.

In California, the proportion of all drivers in accidents who "had been drinking" according to official reports was much the same whether one looked at fatal acidents (14%) or non-fatal accidents (12.5%) in 1950. Over the next 30 years, however, these figures diverged dramatically. The trend in non-fatal accidents was generally one of stability; the proportion of drinking drivers declined slightly until the early 1970s and then rose gradually to 13.3% in 1979, as compared with 12.5% in 1950. The trend in fatal accidents was one of dramatic increase; the proportion of drinking drivers increased steadily throughout the period, rising from 14.0% in 1950 to 30.3% in 1979 (Cameron, 1980; Collins, 1980). Of course, the impact of technological improvements in alcohol measurement should not be ignored when considering this dramatic increase in the proportion of fatal accidents involving drinking drivers.

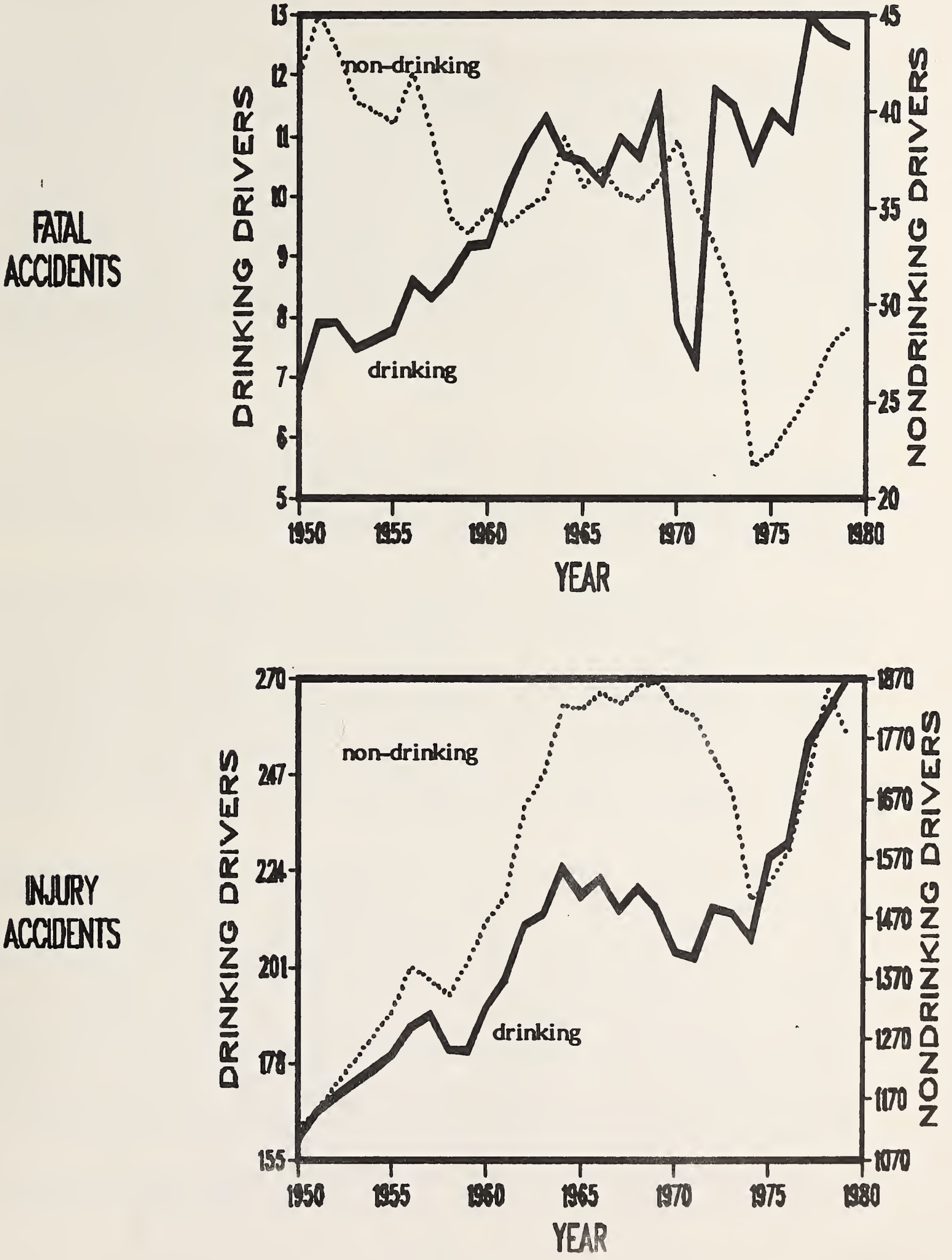
For the population aged 15 and older, fatal and injury accidents exhibited some surprisingly different trends over the past three decades (Figure 6). In the case of injury accidents, the per capita rates of both drinking and non-drinking drivers have increased over the years. For fatal accidents, however, only the rate of drinking drivers has increased; the rate of non-drinking driver fatalities actually exhibited a downward trend for the period.

With regard to injury accidents, the sharper decline in the rate of non-drinking as compared with drinking drivers in accidents during the "energy crisis" years in the mid 1970s is particularly interesting. Apparently, lower speed limits and less driving were more effective in reducing injury accidents among non-drinking drivers. Prior to this period, there was a noticeably sharper increase in the rate of non-drinking than drinking drivers in injury accidents. However, from the mid-1970s onward the rate of increase in per capita trends for drinking and non-drinking drivers has been quite similar.

As for fatal accidents, explanations of the dissimilarity in the rates of drinking and non-drinking drivers may involve several factors. It may be that improvements in medical care over the years have been more successful in converting what would once have been a fatality to a lesser injury among non-drinking drivers than among drinking drivers; thus lowering the number of non-drinking driver fatalities while raising the number of non-drinking driver injuries. Or it may be that changes in autopsy procedures, particularly the greater frequency of blood alcohol testing, or other policies and procedures surrounding alcohol measurement and reporting in fatal accidents have been responsible for much of the difference in trends between drinking and non-drinking accidents. If drinking drivers were significantly under-reported at the beginning of the period, the large subsequent increases in the reported proportion of drinking drivers would have produced an artificially declining per capita trend for non-drinking drivers and an exaggerated increase in the per capita rate of drinking drivers. Unfortunately it is extremely difficult to unravel the factors influencing these accident trends.

FIGURE 6

DRIVERS IN TRAFFIC ACCIDENTS
PER 100,000 OF THE 15 YEARS AND OLDER POPULATION
CALIFORNIA, 1950-1979



DISCUSSION

Overall, the past three decades in California have been a period of increasing alcohol consumption and elevated levels of many, but not all, alcohol-related problems. Only arrests for public drunkenness and alcoholic hospital admissions exhibit 1979 levels below those of 1950. And in both of these cases, the dramatic declines have been largely due to changing social policies on the handling of these problems within the health care and criminal justice systems.

The long term increases in alcohol consumption and in drunk driving arrests and alcohol-related traffic accidents can be considered as evidence of an increase in heavy drinking in California. Nevertheless the recent decrease apparent in cirrhosis mortality and the longer term decreases in the less reliable data on public drunkenness arrests and alcoholic hospital admissions might be interpreted as indicating a decrease in heavy drinkers among Californians. Although it is difficult to draw any conclusions about trends in drinking patterns based on these conflicting indicators; on balance, data that are less directly influenced by policy changes suggest an increase rather than a decrease. Moreover, survey data on California drinking patterns (Field Research Corporation, 1981) does not show any substantial increase in heavy drinkers during this period. Thus, we are left with "indirect" evidence of an increase in heavy drinking: that is, the increase in per capita consumption without any decrease in the proportion of abstainers.

Increases in per capita mortality rates for cirrhosis, alcoholism, and alcohol psychosis over the past 30 years have been smaller than the increase in per capita consumption of absolute alcohol. Per capita rates of drinking drivers in traffic accidents and especially of drunk driving arrests have shown much larger increases than has per capita alcohol consumption.

As issues of public and official concern, drunk driving and traffic accidents have increased in importance, particularly since the late 1960s. Prior to this time, these issues received only scant public or official attention beyond National Safety Council mass media campaigns against drinking and driving in existence since the early 1930s ("If you drink, don't drive; if you drive, don't drink"). On the other hand, public drunkenness lost importance as a social issue in the 1960s and 1970s after its salience in urban renewal efforts of the 1950s. Long-term health problems, such as cirrhosis or alcoholic psychosis, have tended to take a backseat to other more visible problems in the public eye, although sustaining the interest of alcohol researchers.

Trends in recent years indicate that several of the official alcohol problem indicators have exhibited a decline. In addition to the dramatic declines in public drunkenness arrests and alcoholic psychiatric hospital admissions, per capita cirrhosis mortality for the 20 and older population has been declining steadily among women since 1965 and among men since 1970. Per capita adult misdemeanour drunk driving arrests for the 20 and older population have decreased gradually over the period 1973 to 1979. Per capita drinking driver traffic fatalities for the 15 and older population have declined from 1977 through 1979, although per capita drinking driver injuries have continued to increase. These often downward per capita trends in alcohol problems in recent years have occurred in the face of continuing increases in per capita alcohol consumption.

Significant shifts in the societal response to alcohol problems are also evident in California. More and more over the past decade, specialized community-based treatment and rehabilitation programs have been seen as the solution to alcohol problems. Treatment services for alcoholics were shifted from large state-run psychiatric hospitals to smaller community-based programs offering an increasing number of diverse and specialized services. Attempts were made to shift public inebriates from the drunk tanks of the criminal justice system to local rehabilitation programs and drop-in centres. A specific statewide network of independent, local education and rehabilitation programs was established explicitly for drinking drivers, with specialized programs for first and repeat DUI offenders.

Only recently have there been any indications of strong public dissatisfaction with the current rehabilitation model for handling alcohol problems in California. The decade of the 1980s began in California with a grass roots movement demanding and getting "tougher" drunk driving laws and with some local communities demanding a clean-up of the public inebriate problem (Speiglman and Wittman, 1982). Whether these first indications of public dissatisfaction with the social handling of alcohol problems through rehabilitation of the deviant drinker are limited either to a particular alcohol problem or a particular local community, or whether they are indications of a more broadly-based growing public concern, should be of interest to both researchers and policy makers.

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SOURCE LIST FOR FIGURES 1-6

FIGURE 1

Population data: California Department of Finance, Population Research Unit, special computer run

Consumption data: California State Board of Equalization, Research and Statistics Section. Published annually in California Statistical Abstracts. Sacramento: State of California, Documents Section.

Cirrhosis data: U.S. Department of Health, Vital Statistics of the United States, 1950-1978.

Traffic Accident data: California Department of Highway Patrol, Annual Statistical Report, 1950-1961; Traffic Accident Statistics, 1962-1965; Report of Fatal and Injury Motor Vehicle Traffic Accidents, 1966-1979.

Arrest data: California Department of Justice, Bureau of Criminal Statistics, Crime in California, 1950-1964; Crime and Delinquency in California, 1965-1979.

Hospital Admissions data: California Department of Mental Hygiene, Biostatistics Unit. Published in: California Alcohol Data 1973. Sacramento: Office of Alcohol Program Management, 1974;
California State Plan for Alcoholism, 1976-1977. Sacramento: Office of Alcoholism, 1976;
California Department of Mental Health, Data Retrieval and Analysis Section, special computer run.

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California Department of Mental Health, Data Retreival and Analysis Section, special computer run.

FIGURE 5

Population data: California Department of Finance, Population Research Unit, special computer run

Arrest data: California Department of Justice, Bureau of Criminal Statistics, Crime in California, 1950-1964; Crime and Delinquency in California, 1965-1979.

Convictions data: California Department of Motor Vehicles, unpublished data, 1953-1980.

FIGURE 6

Population data: California Department of Finance, Population Research Unit, special computer run

Traffic Accident data: California Department of Highway Patrol, Annual Statistical Report, 1950-1961; Traffic Accident Statistics, 1962-1965; Report of Fatal Injury Motor Vehicle Traffic Accidents, 1966-1979.

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